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Safety

Army Safety and Occupational Health Program Procedures

By Order of the Secretary of the Army:

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History. This publication is a major revision. The portions affected by this major revision are listed in the summary of change.

Applicability. This pamphlet applies to the Regular Army, the Army National Guard/Army National Guard of the United States, and the U.S. Army Reserve, unless otherwise stated. It also applies to Department of the Army Civilian personnel and the U.S. Army Corps of Engineers and civil works activities and tenants and volunteers in accordance with Section 1588, Title 10, United States Code and AR 608–1.

Proponent and exception authority. The proponent of this pamphlet is the Director of Army Staff. The proponent has the authority to approve exceptions or waivers to this pamphlet that are consistent with controlling law and regulations. The proponent may delegate this approval authority, in writing, to a division chief within the proponent agency or its direct reporting unit or field operating agency, in the grade of colonel or the civilian equivalent. Activities may request a waiver to this pamphlet by providing justification that includes a full analysis of the expected benefits and should include formal review by the activity's senior legal officer. All waiver requests should be endorsed by the commander or senior leader of the requesting activity and forwarded through their higher headquarters to the policy proponent. Refer to AR 25–30 for specific guidance.

Suggested improvements. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to usarmy.pentagon.hqda-aso.mbx.army-safety-office@army.mil.

Distribution. This publication is available in electronic media only and is intended for the Regular Army, the Army National Guard/Army National Guard of the United States, and the U.S. Army Reserve.

*This pamphlet supersedes DA Pam 385–10, dated 23 May 2008.

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Chapter 1
Army Safety and Occupational Health Program—General

1–1. Purpose
This pamphlet establishes guidance and procedures for implementing the commander's safety and occupational health (SOH) Program. It assists Army leaders in reducing the risk of death or injury to Soldiers and civilians, as well as damage or loss to Army facilities and equipment. It also establishes guidelines for safety and mishap prevention in Army operations, provides guidance concerning SOH laws and regulations, and establishes procedures for compliance with the safety requirements of AR 385–10 and other regulations and standards.

1–2. References, forms, and explanation of abbreviations
See appendix A. The abbreviations, brevity codes, and acronyms (ABCAs) used in this electronic publication are defined when you hover over them. All ABCAs are listed in the ABCA directory located at https://armypubs.army.mil/.

1–3. Associated publications
Policy associated with this pamphlet is found in AR 385–10.

1–4. Records management (recordkeeping) requirements
The records management requirement for all record numbers, associated forms, and reports required by this publication are addressed in the Records Retention Schedule–Army (RRS–A). Detailed information for all related record numbers, forms, and reports are located in Army Records Information Management System (ARIMS)/RRS–A at https://www.arims.army.mil. If any record numbers, forms, and reports are not current, addressed, and/or published correctly in ARIMS/RRS–A, see DA Pam 25–403 for guidance.

Chapter 2
Army Safety and Occupational Health Management System

2–1. Introduction
This chapter provides guidelines to implement, integrate, manage, and provide continuous improvement of the Army Safety and Occupational Health Management System (ASOHMS), which is a systematic approach to ensure Soldiers, civilians, and contractors are provided a safe and healthful environment free from recognized hazards. It enhances effective planning, preparation, and execution at every level of the organization while providing for continued process improvement. Effective planning, preparation, and execution of an SOH program for organizations ensures reduction of risk in all Army operations which is a major part of enhancing readiness.

2–2. Implementation of the Army Safety and Occupational Health Management System
Commanders of Army commands (ACOMs), Army service component commands (ASCCs), and direct reporting units (DRUs) and Director, Army National Guard (DARNG) should—

a. Identify in writing to the Deputy Assistant Secretary of the Army for Environment, Safety and Occupational Health (DASA (ESOH)) and Director of Army Safety (DASAF) on an annual basis what subordinate commands/units exist within their organization and the progress they have made on implementation of the ASOHMS as defined in DoDI 6055.01.

b. Establish requirements for each subordinate command to, at a minimum, establish mission-specific programs, policies, and processes for all six of the Army SOH capability objectives discussed in paragraph 2–3.

c. Ensure each subordinate command evaluates the implementation on an annual basis to ensure where applicable areas of improvement are identified.

d. Ensure each subordinate command is evaluated by an external auditor to ensure the performance of the minimum ASOHMS standards. This external auditor should be the higher headquarters and conducted every 4 years. Commanders of ACOMs, ASCCs, and DRUs and DARNG may use Occupational

Safety and Health Administration (OSHA) Voluntary Protection Program Star recognition as evidence of implementing an SOH management system.

2–3. Army Safety and Occupational Health Management System

The following are the six SOH capability objectives, elements, and supporting actions in implementing ASOHMS. Commanders of ACOMs, ASCCs, and DRUs and DARNG will ensure subordinate commands support each SOH element to implement the ASOHMS:

a. Leadership engagement and employee/Soldier participation.

(1) Establish and publish an SOH policy based on a risk assessment associated with the risks of their mission.

(2) Establish overall responsibility by having a signed statement of commitment/policy to ASOHMS.

(3) Establish, document, and communicate to employees and contractors clear goals that are specific, measurable, attainable, relevant, and time-bound (SMART) with consideration to workplace hazards and trends of injury and illness.

(4) Develop and implement an SOH-focused strategic plan as outlined in AR 385–10.

(5) Establish policies and procedures to indicate how to accomplish the objectives and meet the goals.

(6) Review the SOH strategic plan annually for effectiveness to improve injury and illness prevention associated with the specific mission.

(7) Ensure a budget is developed, implemented, and managed in conjunction with the organization's SOH strategic plan.

(8) Communicate a policy on SOH that includes the command's commitment to ASOHMS.

(9) Conduct safety meetings at all levels to maintain ASOHMS requirements.

(10) Develop and continue to improve a command level written SOH program that documents the organizations requirements of applicable SOH program elements in accordance with AR 385–10, EM 385–1–1, and OSHA standards.

(11) Identify persons whose SOH responsibility includes carrying out SOH goals and objectives, and clearly define and communicate their responsibilities in job descriptions.

(12) Provide adequate authority and resources to employees who are responsible for SOH that enables them to carry out their responsibilities (including time, funding, training, employees, and so forth). Typical as well as uncontrolled hazards and unusual/emergency SOH expenditures will be included in the budgeting process.

(13) Integrate SOH into other aspects such as planning for new equipment, processes, construction, and so forth.

(14) Hold accountable leaders, supervisors, managers, and those additional Soldiers or employees responsible for SOH for meeting their responsibilities through documented performance standards, with safety as a rated element in the appraisal system.

(15) Establish lines of communication with soldiers and employees allowing for reasonable Soldier and employee access to top leadership at the worksite.

(16) Ensure all Soldiers and employees (including contract and civilian employees) are provided equal, high-quality safety and health protection.

(17) Conduct an annual self-evaluation (not an inspection, but a critical self-evaluation and review with content provided by the Office of the Secretary of Defense (Personnel and Readiness), the Office of the DASA (ESOH), and the Office of the Director of Army Safety (ODASAF) of the SOH management system), with results provided to the Office of the DASA (ESOH) by 15 February of each year in order to:

(a) Maintain knowledge of the hazards of the worksite.

(b) Maintain knowledge of the effectiveness of system elements.

(c) Ensure completion of the previous year's recommendations.

(d) Review and modify as necessary goals, objectives, policies, and procedures.

(e) Hold Soldiers and employees accountable for implementation of the ASOHMS within the organization.

(18) Ensure all Soldiers and employees receive feedback on any suggestions, ideas, reports of hazards, and so forth they bring to leadership's attention. Leadership must provide documented evidence that employees' suggestions were reviewed and implemented when appropriate and feasible.

(19) Ensure all Soldiers and employees, including new hires during orientation training, are notified about participation in ASOHMS and their rights and responsibilities under Public Law 91–596, known as the Occupational Safety and Health Act of 1970.

(20) Ensure proper posting as required.

(21) Ensure the disciplinary process is applied equitably for all personnel: leaders, managers, supervisors, and nonsupervisory personnel.

(22) Implement an SOH awards program for superior SOH performance.

(23) Ensure the contractor oversight program requires contractors to follow the Army and local organizations safety and health rules.

b. Mishap incident, illness reporting, and investigation.

(1) Investigate all mishaps, incidents, and near misses; maintain written reports of the investigations/Board of Investigations and conduct trend analysis.

(a) Investigations will be conducted in accordance with DA Pam 385–40 by employees trained in mishap investigation techniques.

(b) Only employees not involved in the mishap and who do not supervise the injured employee(s) will conduct the investigation to minimize a potential conflict of interest.

(c) The entire process will be documented to illustrate the entire sequence of relevant events.

(d) All contributing factors, emphasizing failure or lack of hazard controls, will be identified.

(2) Recognize that mishaps, incidents, and near misses are failures of work systems and determine whether the SOH management system was effective; recommendations to prevent recurrence will be provided.

(a) Investigations are not to place undue blame or reprisal on employees, even if human error is a contributing factor.

(b) Following investigations, priorities, time frames, and responsibility for implementing recommended controls will be made.

(3) Ensure each organization maintains a written trend analysis program in their local safety standard operating procedure (SOP) or equivalent. The program includes information analysis such as injury/illness history, hazards identified during inspections, employee hazard reports, and mishap and near miss investigations that will be used for the purpose of detecting trends.

(a) The results of trend analysis are shared with leadership and employees and will be utilized to direct resources, prioritize hazard controls, and determine or modify goals, objectives, and training to address identified trends.

(b) Control measures developed and implemented will be reviewed quarterly to ensure their effectiveness.

(c) Ensure compliance with OSHA recordkeeping per AR 385–10 and Part 1904, Title 29, Code of Federal Regulations (29 CFR 1904).

c. Training and promotion. Commanders of ACOMs, ASCCs, and DRUs and DARNG should ensure subordinate commands—

(1) Provide training so leaders, supervisors, nonsupervisory employees, and contractors are knowledgeable of workplace hazards; can recognize hazardous conditions, signs, and symptoms of workplace-related illnesses; and know safe work procedures.

(2) Identify, plan, and fund mandatory and mission essential training per AR 350–1, major subordinate command, and command guidance.

(3) Confirm training for leaders, supervisors, and employees that meet mandatory and mission essential training can be found in the Army Learning Center Purple Book and on the U.S. Army Combat Readiness Center's website.

(4) Provide, track, and evaluate at the command level job-specific training required by OSHA standards.

(5) Confirm leaders at all levels, supervisors, employees, and Soldiers understand and manage their SOH rights and responsibilities.

(6) Verify new employee orientation/training includes, at a minimum, discussion of workplace hazards, protective measures, emergency procedures, employee rights under the Occupational Safety and Health Act of 1970, and ASOHMS.

(7) Provide training to all employees regarding their responsibilities for each type of emergency. Leaders, supervisors, and nonsupervisory employees, including contractors and visitors, must understand what to do in emergency situations.

(8) Identify persons responsible for conducting hazard analysis, including self-inspections, mishap/incident investigations, job hazard analysis (JHA), and so forth, who must receive training to carry out these responsibilities; for example, hazard recognition training and mishap investigation techniques.

(9) Document training attendance. OSHA dictates training frequency in some cases. For non-OSHA required training, established intervals are defined in local training guidance. Additional training is provided when changes occur in work processes, new equipment, new procedures, and so forth.

(10) Verify training curricula is up to date, specific to worksite operations (site-specific), and modified when needed to reflect changes and/or new workplace procedures, trends, hazards, and controls are identified by hazard analysis.

(11) Validate that training curricula is understandable. Ensure persons who have specific knowledge or expertise in the subject area are utilized to conduct training.

(12) Establish and maintain a written personal protective equipment (PPE) program that includes PPE requirements, training, and maintenance.

d. Conduct inspections and assessments.

(1) Have an effective program, policy, or process to perform required SOH inspections (in other words, an effective system that identifies hazards associated with normal operations). This includes safety and industrial hygiene (IH) inspections for the command. Ensure the following:

(a) The inspection program has a means to track results of inspections to ensure all hazards are abated and appropriate command level responsibility assigned, as well as suspense dates and accountability to certify actions have been taken to control or abate the hazard identified during the inspection.

(b) Soldiers and employees at all levels know where they can review the hazard control log and are kept up to date on abatement efforts.

(2) Have a written self-inspection program on an annual basis which addresses hazard tracking and feedback to Soldiers and employees. Ensure the following:

(a) Soldiers or employees conducting inspections are adequately trained in hazard identification as defined in 29 CFR 1960.

(b) Civilian safety career program (CP) 12 SOH employees or unit safety officers (USOs)/additional duty safety officers/collateral duty safety officers perform routine inspections at least quarterly for all areas of responsibilities and workplaces using applicable regulations and standards.

(3) Have a reliable and effective program or process for Soldiers and employees to notify, in writing, SOH concerns to appropriate leaders. Ensure the following:

(a) The written program addresses the hazard tracking log, employee's hazard reports, and how employees receive feedback on the hazards they report. The organization uses the DA Form 4755 (Employee Report of Alleged Unsafe or Unhealthful Working Conditions) or an equivalent.

(b) The organization's written hazards reporting system addresses employees hazard reports.

(c) Employees are aware of the hazard tracking system used to report and track hazards until they are abated or controlled. Approved forms for making written reports of hazards are available to all employees.

(d) Employees agree they have an effective system for reporting SOH concerns.

(e) All employees are able to report conditions that appear hazardous without fear of reprisal and receive timely responses from leaders, managers, or supervisors.

(f) The organization provides feedback to employees within 10 calendar days on the hazard abatement progress reported from the hazard report submission. If hazard abatement takes longer than 10 days, employees are given an estimated time for abatement action completion and the control measures in place until the hazard is abated.

(4) Ensure command employees are aware of the hazards in their area of operations or workspace and the control measures used to protect them and ensure:

(a) The command uses the local hazards tracking log to address inspection results for all areas of the organization.

(b) Leaders, managers, and supervisors use the log to track, control, and abate hazards.

(5) Ensure all applicable hazard control programs are in place and meet the requirements outlined in applicable Army regulations and Department of the Army (DA) pamphlets, engineer regulations and engineer pamphlets, 29 CFR 1960, and DoDI 6055.01.

(a) Review existing hazard control programs required by OSHA standards that pertain to the organization (for example, PPE, hazard communication, respiratory protection, lockout/tag out, confined space entry, process safety management, bloodborne pathogens, and so forth) to ensure compliance with all guidelines, including an annual program review and employee training.

(b) Take proactive steps to control hazards by ensuring all hazard control programs required by OSHA are in place, comply with establish OSHA and organization specific guidelines, personnel are appropriately trained, and the program is reviewed at a minimum annually.

(c) Complete, review, and validate risk assessments or activity hazard analyses at the appropriate level as it applies to job tasks.

(d) Take reactive steps such as the review of historical data (for example, injury/illness data, first report of injury, near misses, employee report of hazards, and so forth) to determine hazard controls effectiveness.

(e) Conduct additional studies and training as applicable to address previously unidentified hazards.

e. Conduct hazard analysis and develop countermeasures.

(1) Establish a hazard identification and analysis system to systematically identify basic and unforeseen safety and health hazards, evaluate their risks, and prioritize and recommend methods to eliminate or control hazards to an acceptable risk level.

(a) Hazard analyses are documented and consider both health and safety hazards.

(b) Documentation will identify the steps of the task or procedure analyzed, hazard controls currently in place, recommendations for additional or more effective hazard controls, data analysis conducted, and responsible parties.

(c) The required hazard identification methods and analysis that must be performed for every worksite is as follows:

1. A baseline survey and analysis is a first attempt at understanding the hazards at a worksite. It establishes initial levels of exposure (baseline) for comparison to future levels so changes can be recognized. Systems for identifying safety and IH hazards to include ergonomic hazards, while often integrated, can be evaluated separately.

2. Baseline survey results are provided to supervisors and to any potentially affected employees/Soldiers.

(2) Perform task-based or system/process hazard analyses to identify hazards of written descriptions for routine jobs, tasks, and processes in order to recommend adequate hazard controls.

(3) Conduct a hazard analysis of significant changes including, but not limited to, nonroutine tasks (such as those performed less than once a year), new processes, materials, equipment, and facilities to identify uncontrolled hazards prior to the activity or use to eliminate or control hazards.

(4) Conduct a pre-use analysis when an organization is considering new equipment, chemicals, facilities, or significantly different operations or procedures to determine the safety and health impact to the employees.

(5) A system is required to ensure monthly routinely scheduled self-inspections of the workplace are conducted.

(a) Self-inspections are to include written procedures that include the frequency of inspection, areas covered, personnel responsible for conducting the inspections, inspection results, responsibility for abatement, and tracking of identified hazards for timely correction.

(b) Inspection results and corrections must be documented.

(6) The organization will operate a reliable system that enables employees to notify appropriate leadership in writing, without fear of reprisal, about conditions that appear hazardous and receive timely and appropriate responses. DA Form 4755 is the recognized form for employees to anonymously report hazards.

(7) IH surveys must accurately identify, characterize, and assess potential workplace health hazards.

(a) Recommend appropriate engineering and administrative controls and/or PPE to prevent occupational related illnesses, injuries, or deaths to Soldiers and civilian workers.

(b) Recommend employees for exposure-based medical surveillance. Perform workplace surveys as scheduled through the master schedule in the Defense Occupational and Environmental Health Readiness System–Industrial Hygiene (DOEHRS–IH) (and other emergency or urgent situations as necessary) to ensure IH hazards are recognized and evaluated using sampling protocols and equipment calibration practices according to regulatory and/or authoritative standards. Results are communicated to the work center. In accordance with DA Pam 40–503 and DA Pam 385–40, the IH survey may be required where additional expertise, time, technical equipment, and analysis beyond the baseline survey may be necessary to determine which environmental contaminants (whether physical, biological, or chemical) are present in the workplace and to quantify exposure so that proper controls can be implemented.

f. Health protection and readiness. Ensure the command occupational health (OH) program describes the medical surveillance exam process, collaboration with IH and health professionals, and proactive measures to prevent workplace injuries and illnesses through full engagement with the command. Ensure the following:

(1) The command's OH program is currently staffed with a qualified OH program manager (PM) supporting its core missions and the OH program enrolls and tracks employees in medical surveillance and such enrollment/tracking is appropriate.

(2) The command has a very clear process for employees to receive care for work-related injuries and the process includes a plan to return the individual to work as soon as practicable.

(3) The command OH program collaborates with IH, human resources/Civilian Personnel Advisory Center, and other professionals to streamline medical surveillance requirements to maximize worksite visit effectiveness/efficiency and to ensure injured or ill workers are effectively treated and returned to work (or medically accommodated).

(4) Supervisors return employees to work after an injury as soon as practicable.

(5) The command OH program strives to be proactive, prevent workplace injuries and illnesses, and to fully engage the organization/installation leadership to support such efforts.

2–4. Implementation of the Army Safety and Occupational Health Management System

Commanders of ACOMs, ASCCs, and DRUs and DARNG will implement the ASOHMS. Commanders, senior leaders, managers, supervisors, and Army personnel will collectively support the implementation of ASOHMS. In addition, table 2–1 outlines functions and tasks that should be used in planning, preparation, and execution of an effective Army Safety and Occupational Health Program (ASOHP). These functions and tasks are routinely performed as feasible by the commander's safety staff to ensure continuous improvement of ASOHMS. Commander's engagement as well as support from commander's staff at every level of the organization is essential for success.

Table 2–1
Army Safety and Occupational Health Program functions and tasks performed by safety and occupational health staff

Common Core Functions/Tasks
Safety and Occupational Health Program Management
Develop, justify, manage, plan, program, and validate budget requirements for resources necessary to conduct safety activities (temporary duty (TDY) travel, salaries, contracts, and so forth).
Response to inquiries (Congressional/special interests/higher headquarters, and so forth).
Review, analyze, and develop Army ground doctrinal publications.
Serve as staff advisors, technical consultants, and coordinators to the commander and staff. Provide guidance for establishing and implementing plans, policies, programs, and procedures for conducting SOH activities at all levels of command. Provide technical assistance and professional assistance to eliminate or control unsafe behavior and environments.
Review and comment on local lesson plans, regulations, and SOPs to ensure incorporation of safe technics, tactics, practices and procedures, and application of risk management (RM).
Maintain appropriate Army safety regulations, directives, messages, and publications in a reference library.
Develop, publish, and integrate safety policies and guidance. Develop and integrate SOH goals, programs, and evaluation criteria into command's plan.
Coordinate with Installation Management Command for necessary safety support for mission training to include maintenance and repair of existing unsafe conditions (facilities, barracks, dining and support facilities, ranges, roadways, and training areas).
Participate in military construction, Army (MCA) and operations and maintenance, Army (OMA) project planning approval and review of work orders.
Review, provide recommendations, and interpret SOH statutes, standards, and policies promulgated by higher headquarters or other regulatory agencies.
Serve on boards, committees, and other groups pertaining to SOH as commander's representative and subject matter expert (SME).
Investigate reports of unsafe and unhealthful conditions and respond within 72 hours of notification with a written report.
Establish, plan, organize, coordinate, and administer an SOH council.

Table 2–1
Army Safety and Occupational Health Program functions and tasks performed by safety and occupational health staff—Continued

Common Core Functions/Tasks
Plan, coordinate, organize, and administer operational safety programs in accordance with local, Army, OSHA, DoD, and other applicable federal regulations.
Budget for resources necessary to conduct safety activities.
Provide direction for the SOH segment of the civilian CP development, manpower justification, training, and mentorship.
Develop and review memorandums of agreement/support agreements.
Establish and maintain liaison with other military Services, federal and civilian agencies, and, where appropriate, host nations (HNs) to ensure cooperation on matters of mutual concern.
Develop and implement tactical safety policies, procedures, and standards designed to minimize mishap loss during tactical operations and training without adversely impacting mission accomplishment.
Provide guidance and assistance to develop and integrate safety requirements into tactical exercises, operations, and training.
Force Projection–Mobilization
Coordinate with other Services to ensure the incorporation of safe practices and standards in Joint training exercises and Joint readiness exercises. Participate in joint mobilization, tactical exercises, and operations.
Review plans to ensure the safety of Army personnel and the public for proposed demonstrations, exhibits, exercises, maneuvers, and contingencies.
Provide technical safety advice in planning, preparation, and execution of Army tactical operations. Participate in the planning, conduct, and debrief of exercises. Participate in related activities to include in-process reviews. Ensure the incorporation of safety principles into all field training operations orders.
Review and evaluate courses of action in the decision-making process and make recommendations for operations.
Review and make recommendations regarding the conduct of overhead fires.
Participate in the final acceptance inspections following construction, renovation, or modification of facilities prior to any firing on the range.
Review range modification and construction proposals, designs, and plans.
Assist the installation range control officer, Public Affairs Office, and explosive ordnance disposal (EOD) officer as required in developing and implementing an on- and off-post range safety and dud awareness educational program targeted to children.
Review and assist in development of risk assessments of military training conducted on range and training areas.
Assess training conducted on all ranges.
Provide oversite for range safety matters, evaluating the effectiveness of implementing range safety tactics, techniques, and procedures.
Inspect range infrastructure.
Develop and implement range safety procedures and standards.
Advise and assist in developing range safety waivers and deviations.
Assist in the Army Weapons/Ammunition Malfunction Investigation Program.
Develop, plan, organize, and execute workplace safety programs to include ergonomics, hazardous communications, respiratory protection, PPE, materials handling and storage, machinery and machine guarding, hand and portable powered tools and other handheld equipment, electrical safety, bloodborne pathogens, and confined space programs.
Execute and monitor workplace safety programs.
Review safety data sheets (SDSs) for each activity.

Table 2–1
Army Safety and Occupational Health Program functions and tasks performed by safety and occupational health staff—Continued

Common Core Functions/Tasks
Ensure each activity maintains an SDS.
Assess workplaces to ensure individuals receive training on exposed hazards.
Conduct operational walkthrough inspections of industrial areas.
Ensure hazardous materials are stored in accordance with federal and Army standards.
Ensure personnel receive training in the proper wear of protective equipment.
Coordinate with fire and emergency services (F&ES) on the development of the fire protection plans.
Assist supervisors in the evaluation of proper material handling and storage.
Assist in the development and implementation of lockout/tag out procedures for each piece of equipment.
Evaluate sports and recreation fields; develop reports for recommendation of countermeasures.
Administer child care development safety program.
Monitor and integrate safety standards, tactics, and techniques in recreational, sports, and family safety programs.
Establish and Implement an explosive safety program.
Serve as point of contact for ammunition and explosives (AE) safety actions.
Advise and ensure safe handling of explosives, storage, and use.
Review site plans, safety submissions, and facility designs.
Review safety waivers and exemption requests for facilities and equipment and provide the commander with essential risk data regarding the deficient situation.
Review memorandums of agreement with non-DoD organizations for the storage of non-DoD AE on the installation.
Implement and execute the Army Traffic Safety Training Program.
Develop, plan, and coordinate a vehicle safety program to include procedures for the safe operation of all army vehicles.
Develop and implement a privately-owned vehicle (POV) safety program.
Participate and review traffic engineer studies.
Review and analyze feeder reports for motor vehicle mishaps.
Develop and execute system safety programs for all procurement activities.
Execute the system safety program for all new construction and all renovation facilities.
Integrate system safety in human systems integration.
Review safety releases. Review, assess, and provide recommendations for operational requirements documents.
Review and evaluate system training plans and integrate safety procedures.
Conduct new equipment/system assessments/evaluations (DoD/commercial off-the-shelf (COTS)) for integration of safety and RM.
Establish and implement a radiation safety program (RSP).
Advise and ensure safe handling of radioactive material (RAM), storage, and use.
Maintain inventory of all RAMs, radiation sources, and radiation producing devices, and ensure 100 percent accountability.
Advise and ensure safe handling of lasers and radio frequency (RF) systems.
Review site plans, safety submissions, and facility designs.

Table 2–1
Army Safety and Occupational Health Program functions and tasks performed by safety and occupational health staff—Continued

Common Core Functions/Tasks
Designate radiation safety officer (RSO) for ionizing radiation sources, lasers, and RF sources.
Ensure RSO is adequately trained commensurate with the duties and types of material within the program.
Ensure individuals working with RAMs or nonionizing radiation are properly trained.
Establish dosimetry program, if necessary.
Perform required radiation safety surveys.
Ensure all radiation sources are secured against unauthorized use and removal.
Ensure a U.S. Nuclear Regulatory Commission (NRC) license or Army Authorization authorizes all RAM.
Arrange for proper disposal of radioactive waste.
Ensure all radiation survey instruments are functional and properly calibrated.
For Army laser ranges, evaluate all type-classified or commercial Class 3B or Class 4 lasers before use.
Facilitate in the disposal of all unwanted military-exempt lasers and radioactive waste properly.
Maintain laser and RF inventory.
Promptly report all mishaps and incidents involving personnel radiation exposure or radioactive contamination of facilities, equipment, or the environment or loss of RAMs through appropriate channels.
Ensure all personnel occupationally exposed to ionizing radiation or RAM above applicable levels participate in an appropriate dosimetry or bioassay program.
Audit subordinate RSPs.
Manage Radiation Safety Council meetings as required.
Develop and issue Army radiation authorizations (ARAs).
Investigate personnel exposures exceeding levels specified in AR 385–10.
Ensure acquisition programs identify and arrange for NRC licensing of items, if applicable.
Respond to radiation incident/mishap.
Perform license compliance audits.
Prepare NRC license applications and amendments.
Ensure cradle to grave life-cycle programs are identified for all commodities containing RAM.
Ensure COTS items comply with Army and NRC regulations.
Ensure transport of RAMs complies with Army, DoD, and federal regulations.
Establish and update training programs for radiation safety.
Ensure all personnel receive depleted uranium (DU) training.
Ensure all redeploying soldiers complete a DU questionnaire and provide a bioassay, if warranted.
Ensure contractors comply with all Army, DoD, and federal regulations.
Issue Army radiation permits (ARPs) as required.
Plan and conduct aviation safety training.
Evaluate all aviation facilities.

Table 2–1
Army Safety and Occupational Health Program functions and tasks performed by safety and occupational health staff—Continued

Common Core Functions/Tasks
Distribute aviation and safety flight information.
Review reports of mishap investigation boards for completeness, accuracy, and the appropriateness of findings and recommendations.
Develop a pre-mishap plan.
Conduct special general officer directed operational assessments.
Inspections, Surveys, Assessments, and Technical Consultation
Schedule and execute evaluations and assessments of the command's mishap prevention efforts, effectiveness of RM, and accomplishment of command safety goals and objectives.
Integrate safety and RM assessment criteria into command and other staff evaluation and assessment programs (for example, organizational inspection program, quality assurance, inspector general, and so forth).
Establish and maintain a listing of all operations and activities based on level of risk.
Review and conduct special assessments of training, events, sites, facilities, and so forth as required/directed.
Evaluate range facilities to identify hazards and noncompliance issues for corrective actions.
Review all identified hazards and assign a risk assessment code (RAC). Ensure hazards are in installation master plan as priority with RAC 1 and RAC 2 corrected within 30 days. Maintain hazard list and ensure adequate forms are complete and posted in compliance with Army and federal regulations.
Establish and maintain safety web page; provide safety information to other websites as appropriate.
Prepare, coordinate, and publish command safety awareness correspondence (holiday safety messages, safety of use messages, special emphasis memorandums, and so forth).
Design, conduct, develop, and integrate RM training into military and civilian training.
Mishap and Near Miss Investigations
Collect, review, and analyze data from various sources (mishap records, exposure assessments, feasibility studies, hazard probability and severity modeling, inspections, surveys, Army Readiness Assessment Program results, product and document assessments, and so forth) to identify trends, systemic deficiencies, and profiles for use in establishing program initiatives and priorities.
Conduct mishap investigations.
Administer a mishap notification and reporting program for the command to ensure timely and accurate notification and reporting of mishaps and related data.
Provide technical assistance in mishap investigation and reporting to ensure accuracy, completeness, and timeliness.
Conduct investigations or support mishap/incident investigation boards (internal and external) as required. Coordinate findings and recommendations with the correct proponent for corrective actions. Review, analyze, and inspect mishap scene, conduct interviews, and develop written reports.
Education, Training, and Promotion
Provide hazard recognition and abatement training specific to regulatory and statutory requirements for worksite or activity.
Develop and execute safety promotional and special emphasis campaigns and programs to enhance safety awareness throughout the command.
Assist Army course proponents in the integration of safety and RM into training products; training support packages and lesson plans for common core, leadership, and senior Army leadership courses.
Integrate SOH procedures into all Army training guidelines and techniques.
Conduct required industrial safety training as required by local, Army, OSHA, and other applicable federal regulations.

Table 2–1
Army Safety and Occupational Health Program functions and tasks performed by safety and occupational health staff—Continued

Common Core Functions/Tasks
Design, develop, conduct, and integrate safety and RM into Leader Development and Safety Officer/Noncommissioned Officer (NCO) Training.
Develop and integrate safety and RM into doctrine, organizations, training, material, leader development, personnel, and facilities.
Hazard Analysis and Countermeasures
Collect, analyze, and disseminate mishap data concerning the experience of the command and report to commanders and subordinate elements. Develop recommendations for corrective action where warranted by adverse mishap rates or trends, hazardous conditions or procedures, and other deficiencies.
Develop, implement, and manage a countermeasure development program (develop control measures, procedures, programs, engineering, administrative, elimination, and PPE).
Perform critical combat task analysis to identify hazards and requisite safety standards.
Ensure adequate safe practices and safe physical standards are incorporated into SOPs, manuals, directives, and other instructions.
Integrate RM in planning, preparation, and execution of operations.
Review all equipment, system, and facility design plans for integration of safety concepts, principles, and applicable safety requirements.
Review all live-fire range design plans for integration of safety concepts, principles, and applicable safety requirements.
Plan and manage foreign object damage (FOD) prevention program.
Special Tasks
Administer dredging safety, floating plant safety, and diving safety programs for U.S. Army Corps of Engineers (USACE) civil works employees and equipment and for contractors.
Serves as SME or competent person for specialized safety areas as required by OSHA or command policy on USACE civil works projects (that is, dive coordinator, excavation competent person, scaffolding competent person, and so forth).
Establish and implement chemical/biological agent safety program.
Serve as point of contact for chemical/biological agent safety actions (subtask).
Advise and ensure safe handling of chemical/biological agent, storage, and use (subtask).
Review site plans, safety submissions, and facility designs for chemical/biological agent testing (subtask).
Review chemical/biological safety waivers and exemption requests for facilities and equipment and provide the commander with essential risk data regarding the deficient situation (subtask).
Promptly report all mishaps and incidents involving chemical/biological agent exposure or chemical/biological agent contamination of facilities, equipment, or the environment, or loss of chemical/biological agent materials through appropriate channels (subtask).
Respond to chemical/biological agent incident/mishap/exercises (subtask).
Ensure transport of chemical/biological agent materials complies with Army, DoD, and federal regulations (subtask).
Establish and update training programs for chemical/biological agent safety (subtask).
Identify, assess, control, implement, and provide risk criteria to make decisions concerning hazards and operations associated with developmental testing/operational testing and test support operations.
Nuclear Reactor Safety Program.
Develop and execute a Joint commission on accreditation of health care organizations safety program.
Administer a chemical hygiene program (laboratory safety).
Manage safety awards program.

Table 2–1
Army Safety and Occupational Health Program functions and tasks performed by safety and occupational health staff—Continued

Common Core Functions/Tasks
Manage OH/IH program.
Support system safety review boards; for example, fuse ignition and insensitive munitions.
Provide safety support during mobilization and disaster relief.
Provide safety support to homeland defense activities; battle assemblies, southwest border mission, civil support teams, and state active duty missions.
Port and rail head safety.
Contract safety reviews.
Administer the IH program as it relates to USACE civil works projects and MCA.
Review design documents and assess environmental restoration construction projects.
Conduct operational walkthrough inspections of industrial areas for health hazard inventory, assessment, and evaluation.
Review design documents, inspect, and assess asbestos/lead construction projects.
Conduct ventilation studies and design review.
Conduct illumination studies and design review.
Administer the medical surveillance program.
Administer the hearing and vision conversation programs.
Conduct indoor air quality assessments.

2–5. Deviation documentation and risk acceptance

a. When intentionally deviating from written safety standards, documentation will include specifics regarding the initial and residual levels of risk associated with the deviation, the policy and/or standard (that is, the publication and paragraph numbers) from which the operation will deviate, the control measures selected, and the required level of risk acceptance in accordance with table 2–2. Safety offices need to track and review all approved deviations for trends. Deviations (waivers, exemptions, and secretarial certifications) involving AE or chemical agents must be documented using DA Form 7632 (Deviation Approval and Risk Acceptance Document (DARAD)), see DA Pam 385–64. DA Form 7632 may also be used to document safety deviations other than those involving AE and chemical agents.

b. Addressing a general risk, that is, a situation involving management of a risk that does not involve a standard, is referred to as risk acceptance. Risk acceptance documentation must include specifics regarding the initial and residual levels of risk, the control measures selected, and the required level of risk acceptance per table 2–2. Safety offices track and review approved risk acceptances for trends.

Table 2–2
Risk acceptance authority for safety standards deviation[1, 2, 3, 4]

Duration of risk				
	Event waiver[5]	**Waiver**		**Exemption**
Category of risk	1 month or less	1 month to 1 year	1 year to 5 years	Permanent or greater than 5 years
Extremely high risk	GO	Army Headquarters CG	Army Headquarters CG	Army Headquarters CG
High risk	Brigade (BDE) CO or responsible O–6	GO	GO	GO

Table 2–2
Risk acceptance authority for safety standards deviation[1, 2, 3, 4]—Continued

Medium risk	Battalion CO[6] or responsible O–5	BDE CO[6] or responsible O–6	GO[6]	GO[6]
Low risk	Company CO or responsible O–3	Battalion CO[6] or responsible O–5	BDE CO[6] or responsible O–6	BDE CO[6] or responsible O–6

Legend:
CO = commanding officer
GO = general officer
Army Headquarters CG = commanders of ACOMs, ASCCs (including Joint Forces Land component commands and GO-level Joint Task Forces), and DRUs and DARNG.

Notes:

[1] For deviations involving violations of AE or chemical agent safety standards during Joint operations planning, training, and execution, refer to CJCSI 4360.01 and Service risk acceptance guidance. Also see DA Pam 385–64.

[2] High risk (beyond 1 month) or extremely high risk will always be accepted by a GO or flag officer.

[3] For hazards discovered in fielded acquisition programs, risk will be accepted in accordance with DA Pam 385–16.

[4] Deviations from range standards and procedures are addressed in AR 385–63.

[5] In organizations led by DA Civilian leaders, equivalent civilian grades may be substituted for military ranks.

[6] May delegate in writing authority to accept at the next lower command level.

Chapter 3
Goals and Strategic Planning

3–1. Introduction

a. An important step in developing and implementing an ASOHP is to identify strategic goals and plans required to achieve effective implementation.

b. Mission objectives should include goals for an ASOHP. All organizations, from commanders of ACOMs, ASCCs, and DRUs and DARNG to the lowest level, can determine what their goals for safety should be and how best to achieve those goals.

c. Strategic planning and goal setting has several benefits:

(1) It establishes realistic goals and the plan(s) necessary to achieve them, allowing the entire organization to orient in the same direction. Disjointed operations or actions that do not contribute to plan implementation and goal achievement are thereby controlled and eliminated, reducing waste of limited personnel and resources.

(2) It aligns all elements of the command/organization to work together to identify what is necessary for the command/organization to support Army safety goals and their associated plans. All personnel in the organization then have an improved understanding of their role within the ASOHP to help promote its overall objectives.

(3) It determines the overall strategy to enhance efficient resource allocation and management.

3–2. Establishing appropriate safety goals

Higher-level organizational requirements, internal requirements, and readiness support requirements shape SOH goals. Effective goals for safe operations focus on the organization's mission.

a. DA long-term strategic goals and objectives are established by the Assistant Secretary of the Army (Installation Energy and Environment), these goals and objectives are based on input and analysis from DASAF and commanders of ACOMs, ASCCs, and DRUs and DARNG.

b. Commanders of ACOMs, ASCCs, and DRUs and DARNG use the long-term strategic goals and objectives to evaluate the effectiveness of their ASOHP and determine specific higher-level organizational gaps. Results of this evaluation are used to define SOH goals and objectives. Each ACOM, ASCC, DRU commander and DARNG ensures subordinate commands, down to BDE equivalent, establish effective goals and objectives to improve their program to achieve higher headquarters goals and objectives.

c. Strategic goals and objectives are documented and communicated to Soldiers, employees, and contractors. Goals will be SMART with consideration to workplace hazards and trends of injury and illness impacts to readiness and lethality.

d. Each command level reviews goals and objectives at least annually for effectiveness to improve injury and illness prevention efforts associated with the specific mission.

3–3. Developing and implementing a safety and occupational health strategic plan

a. SOH strategic plans facilitate achievement of the SOH strategic goals through command action and the involvement of all elements of the command.

b. Leaders, commanders, managers, and supervisors are responsible for ensuring their SOH strategic plans are identified and incorporated into each commander's budget and personnel requirements documents to support Army safety goals.

c. The commander ensures the SOH strategic plan is implemented. This is accomplished through action plans (or work plans) for each goal and area of the plan. Specific tasks are assigned, milestones established and tracked, and progress regularly reported to the commander.

d. Resource utilization is part of the reporting process to verify that funds are applied in a timely and efficient manner to the appropriate tasks. Command progress reviews of the plan are conducted on a quarterly basis or more frequently if required by the complexity of the plan or as determined by the commander.

e. Any shortfalls in what is required, as identified in the budget and other documents, are documented along with the projected impact of the shortfall on achievement of safety goals.

Chapter 4
Safety and Occupational Health Hazard Identification Guidance

4–1. Introduction

Army leaders, supervisors, and managers should ensure all operations are free from recognized hazards that may cause serious injury or death through elimination of the hazards or reducing the hazard risk to the lowest possible level. This requires collaboration between SOH professionals, IH, OH, F&ES, facility engineers, health physics or RSOs, and other professionals to develop and execute SOH programs that identify and minimize risk.

4–2. Standard Army safety and occupational health inspection

a. The designated SOH safety official performs internal assessments and inspects various aspects of the program throughout the year using approved metrics to evaluate the status of program implementation within the organization. Each command's SOH program is assessed on a regular basis.

b. The USO performs the following:

(1) Survey the condition of unit property (organizational equipment) and facilities (ammunition storage areas, arms rooms, motor pools, and field training sites, including bivouac sites). Advise the commander and recommend corrective action of identified safety deficiencies. Follow up to ensure completed corrective action.

(2) Prioritize hazards identified during the survey by mishap probability and severity, recommend controls or corrective action, track hazards on a hazards control log, track abatement of the identified hazards, and advise the commander and unit leaders as appropriate.

c. The supervisor has the responsibility of ensuring the workplace is free of known hazards and personnel are following procedures. The supervisor's inspections tend to be less formal, often undocumented, with corrective action taken immediately. When the hazard cannot be corrected on the spot, apply any available mitigation strategies, document the hazard, and notify the SOH manager. A work order (or similar document) may be necessary to obtain the necessary help to fix a problem. Workers also have a responsibility to report unsafe or unhealthy working conditions that they may uncover in their day-to-day activities. Tools and guidance for conducting supervisor inspections are available on the OSHA website. Check the following three basic areas for effectiveness:

(1) Documentation activity (JHAs, SOPs, PPE, and so forth).

(2) Personnel knowledge (ensure personnel are knowledgeable of safety and health programs through direct interviews with personnel).

(3) Site review for hazards, verification of appropriate safety equipment, correct use of safety equipment (including PPE), and onsite documentation (SDSs, emergency phone numbers, SOPs, and so on).

d. The SOH inspection is conducted by professionals in the SOH field and applies accepted analysis and data gathering techniques to ensure unbiased and accurate information.

(1) The team gathers data from a variety of sources using the most appropriate instrument for each data source. The worker or manager provides the procedures designated as mandatory for evaluation.

(2) In addition to the procedures stated in paragraph 4–2*d*(1), other information and data may be collected as determined by the safety manager/inspection team. For example, to obtain information on how the safety program is impacting POV driving habits, the team may develop and conduct a survey of licensed drivers assigned to the installation, direct interviews of a statistically valid sample of drivers, and review mishap statistics.

(3) The team correlates and compares each source of data to obtain the most accurate possible assessment. Not all aspects of an SOH program have many potential ways of obtaining data. Tailor data collection to each program element.

(4) During the inspection process, the inspection team reviews the written and approved SOH plan. The team should also discuss the plan with the safety manager and staff to gain a full understanding of the plan and the reasoning behind the approach set forth in the plan. When possible, interview the commander to obtain insight and intent for the command SOH plan.

(5) During the analysis process, use historical data as well as data collected by the team. Whenever possible, evaluate and analyze previous year(s) data in context with the current year to determine if a trend is present. Take care to ensure that the data from each year are compatible (for example, same definition of each data element, collected the same way).

(6) Once the data collection and analysis process is completed, the team meets to discuss the findings. The team leader leads this discussion and provides open and frank debate of the findings. The team documents the consensus results and use for the report. If consensus is unreachable on any particular issue, the team leader makes the final determination.

(7) All findings should be included and tracked in a hazards control log to closure by the organization inspected.

(8) The team documents the results of the SOH inspection and assessment in a report. The results of inspection report are a standalone document that addresses:

(a) Purpose of the inspection.

(b) The data collection process/procedures used.

(c) Analysis techniques applied.

(d) Findings from the inspection and analysis.

(e) Compliance reference for violations and recommended corrective actions.

(9) The team provides the report to the safety manager for the inspected installation/command for review and comment prior to publishing.

e. All worksites, such as offices, require safe operating conditions. Factors such as adequate lighting, noise levels, furniture that is ergonomically sound, and so on are considerations for office safety.

(1) Plan each inspection with guidelines developed to lead the inspectors through the process. The guidelines should address major areas of safety. Use guidelines to focus the attention of the inspection team on critical areas where historical data identifies higher risk. The inspection teams should systematically examine the worksite, making note of deficiencies and their potential harm. The inspection team has available the equipment (such as light meters, decibel meters, and electrical testing equipment) that is needed for the inspection. The team should use the appropriate PPE required for access to the worksite. Area inspection guidelines should ensure that:

(2) Policies for operation focus on safe and healthful operations.

(3) Definitive goals for safety and health are established.

(4) The managers and supervisors provide visible engaged leadership that demonstrate their commitment to safety.

(5) All Army personnel are accountable for safe operations.

(6) Performance of hazard analysis is conducted regularly through risk assessment, job safety analysis, or JHA.

(7) Army personnel identify and act upon any hazards in a timely basis.

(8) All Army personnel are trained in safety and proper procedures in the event of an incident. Maintain records to document personnel safety training.

(9) All mishaps and near mishaps are investigated promptly and thoroughly.

(10) All mishaps are reviewed to determine if any patterns or trends are evident through a written trend analysis program.

(11) Preventive maintenance is performed to maintain equipment in safe operating condition.

(12) An emergency plan has been prepared for potential emergencies and personnel are briefed on what they are to do in the event of an emergency.

(13) All Army personnel know about exposed hazards at the worksite and how to react to particular hazards.

(14) Managers and supervisors understand their responsibilities to ensure a safe and healthful workplace environment.

Chapter 5
Tactical Safety

5–1. Introduction

This section describes guidelines for mitigating risk to personnel, equipment, and facilities affected by tactical operations. Consider these guidelines during the military decision-making process and in the development of risk reduction controls for DD Form 2977 (Deliberate Risk Assessment Worksheet). It is critical that the Soldiers and leaders who execute mission tasks understand and can employ regulated material and understand that additional controls may be required based upon real-time conditions. Units should fully integrate regulated material into the unit operations process through the after action review (AAR) to mitigate the effects of human error, equipment breakdowns, and the complexity of the operating environment.

5–2. Unit safety posture

a. Readiness depends on the ability of a unit to perform its mission essential task list to standard. Ready units have the following:

(1) Self-disciplined Soldiers who consistently perform to standard.

(2) Leaders who are ready and able to enforce standards.

(3) Training that provides the skills needed for performance to standards.

(4) Standards and procedures for task performance that are clear and practical.

(5) Support for task performance, including required equipment, maintenance, facilities, and services.

b. Performing to standard is one of the key steps in preventing mishaps. All tasks are identified and reviewed to ensure that adequate controls exist and that risks are addressed and mitigated. It is the leader's responsibility to ensure standards are enforced and only prudent risks are undertaken. However, each leader should be aware that written standards may not exist for every situation.

5–3. Medical evacuation planning

Medical evacuation (MEDEVAC) is the process of moving any person who is injured or ill to and/or between medical treatment facilities (MTFs) while providing en route medical care. In all cases, patients must have immediate access to or be transported to where an appropriate level of care can be provided. Special attention should be directed to the utilization of military MEDEVAC assets in a tactical operation, or military or civilian MEDEVAC assets in a high-risk training environment. At a minimum, a MEDEVAC plan must:

a. Include a risk assessment and the mission, enemy, terrain, weather, troops and support available, time available, and civil considerations analysis.

b. Provide the appropriate medical support response for the tactical field or training environment (for example, combat lifesaver, medic, and so forth).

c. Be developed specifically for the tactical field or training environment.

d. Provide for coordination with external casualty response assets in accordance with theater evacuation or local emergency medical services policies' levels of MEDEVAC for each event. The patient's medical condition is the overriding factor in determining the evacuation platform and MTF destination. The designated medical support should make the decision on the type of MEDEVAC and type of patient (for example, ambulatory and litter).

(1) URGENT. Evacuation required as soon as possible to save life, limb, or eyesight.

(2) URGENT SURGICAL. Evacuation required for far forward surgical intervention to save life and stabilize for further evacuation.

(3) PRIORITY. Evacuation required within 4 hours or the patient's medical condition could deteriorate to an urgent category.

(4) ROUTINE. Evacuate patients in this category within 24 hours.

(5) CONVENIENCE. Assigned to patients for whom evacuation by medical vehicle is a matter of medical convenience rather than necessity.

e. Include MEDEVAC ground ambulance procedures.

(1) Ground evacuate patients from forward areas whenever possible. Use any vehicle for evacuation in the absence of a frontline ambulance.

(2) Ensure lines of communication to supported units and designated ground ambulance vehicles.

(3) Identify locations and distances of nearest MTFs.

(4) Conduct recon routes from forward units to nearest MTF and rehearse evacuation when tactically feasible.

f. Include MEDEVAC air ambulance procedures.

(1) Evacuation by air ambulance should be the primary means used for URGENT and URGENT SURGICAL patients, although evacuation by air ambulance is the preferred means for all patients when high evacuation workloads exist.

(2) Ensure lines of communication to supported units and air ambulance are available.

(3) Establish flight procedures specific to air evacuation missions within the air ambulance aircraft.

(4) Establish MEDEVAC briefing and launch procedures. Ensure there is 24-hour access to those able to launch high- and very high-risk missions.

(5) Identify and secure the best potential landing zones for air ambulances.

(6) Consult and coordinate with appropriate medical support authority when air ambulances cannot be launched to execute a requested mission.

5–4. Field site surveys

a. Conduct an inspection of the tactical assembly area, analyze the risks, and assign action officers to correct unsafe conditions within the first 24 hours of the operation.

b. Reduce hazards to the lowest risk level possible and forward completed actions to the safety office.

c. Maintain results of surveys for AAR purposes.

5–5. Operational hazards

Certain phases of an operation are readily identifiable as being high risk. These areas usually receive the most attention from leaders and mission planners, particularly when time is limited. However, in reality most mishaps occur during low- to medium-risk operations or tasks (by-the-book preventive maintenance checks and services, preparing a vehicle for recovery, and so forth). Perceived low or medium risks can quickly spike to high or extremely high due to failures in planning, failures to communicate approved risk reduction controls, or failures to adjust controls based on real-time conditions. Haste, overconfidence in others, and complacency are often contributing. The following factors, operations, or tasks require vigilance and leader engagement:

a. Unit rest plan and impact of sustained sleep deprivation.

b. Staging area operations and fatigue.

c. AE storage, issue, transportation, separation, and emergency action plan.

d. Convoy operations, communications, and environmental contingencies.

e. Vehicle restraints (including gunner and air guards), nametag defilade, and rollover and fire drills.

f. Vehicle recovery.

g. Operations in and around water and fording.

h. Marking of fighting or sleeping positions based on adjacent unit and vehicle/aircraft vision systems in use.

i. Medical support communications plan, responsibilities, and environmental contingencies.

j. Rules of engagement, weapons status, clearing procedures, and mount and dismount of weapons.

k. Prevention of fratricide.

l. Execution of mission essential task list items not performed during long deployments or previous assignments.

5–6. Safety in tactical assembly and bivouac areas

Many mishaps occur in tactical assembly and bivouac areas (especially at night) and most are due to a lack of training or PPE, violations of standards, and/or complacency. Commanders and leaders should enforce discipline and provide training and procedures for:

a. Site selection.

b. Assembly and disassembly of structures.
c. Camouflage.
d. Placement and removal of protective barriers and wire.
e. Field sanitation.
f. Generators.
g. Field mess operations.
h. Storage of flammable liquids and gases.
i. Fire prevention and fire extinguishers.
j. Grounding of equipment.
k. Restriction and/or control of motor vehicles.
l. Heaters.
m. Carbon monoxide poisoning awareness.
n. Antenna and/or signal equipment.

Note. These same factors may apply to fixed or established tactical areas.

5–7. Sleeping areas
To minimize the hazards associated with Soldiers being run over while sleeping, units should implement the following procedures:
a. Establish safe sleeping areas that are clearly marked and protected from vehicle movement hazards.
b. Drivers should conduct a walkaround inspection and use ground guides to ensure personnel are not sleeping or lying under or around vehicles prior to moving vehicles.

5–8. Tactical water operations
a. In order to prepare for combat operations, incorporate water survival training into the unit physical training program.
b. Commanders of units conducting water operations or conducting operations in or around water hazards should develop and implement SOPs to identify weak and nonswimmers and provide water survival training appropriate to their mission on the most likely water hazards that personnel may encounter.
c. Commanders of units conducting water operations should develop and implement SOPs and advanced training for vehicle swimming, fording operations, and stream crossings.

5–9. Fire safety
a. Establish fire prevention measures for tactical assembly areas and, where possible, coordinate with F&ES.
b. Brief personnel on actions to take at the first sign of fire, alert and evacuation procedures of personnel, and firefighting capabilities and limitations.
c. Ensure leaders develop and implement a fire protection plan for sleeping areas and permit smoking only in designated areas.
d. Review AR 420–1 for F&ES.

Chapter 6
Aviation Safety Programs

6–1. Introduction
This chapter establishes implementation guidance for commander's aviation safety and aviation-specific command support programs. It focuses on the integration of RM within the Army aviation community.

6–2. Operational hazard reporting
An operational hazard is any condition, action, or set of circumstances that compromise the safety of Army aircraft, associated personnel, airfields, or equipment. Correct operational hazards at the lowest level possible.
a. Operational hazards include inadequacies, deficiencies, or unsafe practices pertaining to:
(1) Air traffic control (ATC).
(2) Airways and navigational aids.

(3) Controller procedures and techniques.

(4) Near mid-air collisions (NMACs) between aircraft or near collisions between aircraft and other objects in the air or on the ground.

(5) Aircraft operations.

(6) Aircraft maintenance or inspection.

(7) Weather services.

(8) Airfields and heliports facilities or services.

(9) Flight or maintenance training and education.

(10) Regulations, directives, and publications issued by DoD agencies, the Federal Aviation Administration (FAA), the International Civil Aviation Organization, and HNs.

b. Use DA Form 2696 (Operational Hazard Report) to identify and report potential hazards to Army aviation.

(1) Use DA Form 2696 to record information about hazardous acts or conditions before a mishap occurs. Maintain readily available blank copies of DA Form 2696 for all aviation-related personnel.

(2) Use DA Form 2696 within the DA for mishap prevention purposes only. A DA Form 2696 is not required when an aircraft mishap report will be prepared in accordance with DA Pam 385–40 or when a deficiency report will be submitted in accordance with DA Pam 738–751. Do not use DA Form 2696 under the following circumstances:

(a) To report alleged flight violations. AR 95–1 provides guidance for processing alleged flight violations.

(b) In determining misconduct or line of duty status of Army personnel.

(c) To determine pecuniary liability.

(d) As evidence for disciplinary action.

(3) Use the following procedures to submit a DA Form 2696:

(a) Any person (military or civilian) may submit a DA Form 2696.

(b) Complete DA Form 2696, block 2 if the individual submitting wishes to receive a copy of the completed report.

(c) Submit the completed DA Form 2696 along with any supporting documentation to an Army safety office (ASO) or Army flight operations office.

(4) Report hazards observed in flight to the nearest radio contact point. Prepare and submit DA Form 2696 after landing. In the event of an NMAC, transmit an immediate airborne report to the nearest air traffic agency; that is, flight center, flight service station, or control tower. Provide the following information when reporting an airborne operational hazard or NMAC:

(a) Identification or call sign of the individual submitting the report.

(b) Time and location of the occurrence.

(c) Altitude or flight level.

(d) Description of the other aircraft.

(e) An advisory to the controlling agency that a written report (DA Form 2696) will be filed.

(5) Use DA Form 2696 to report hazards that affect aviation safety. Report hazards not pertaining to aviation safety on DA Form 4755.

(6) Process DA Form 2696 as follows:

(a) Submit DA Form 2696 to an ASO or Army flight operations office.

(b) Promptly forward reports submitted to an operations office to the organization's ASO.

(c) Transfer DA Form 2696s pertaining to other organizations as soon as possible to the appropriate organization ASO.

(d) Forward any DA Form 2696 to the Commander, U.S. Army Combat Readiness Center (CSSC–OA), Fort Rucker, AL 36362–5363, when actions pertain to:

1. Army Staff; ACOMs, ASCCs, DRUs, and DARNG; or subcommands not in the chain of command.
2. Other DoD Armed Services, the U.S. Coast Guard, or HN.
3. Other subject commanders or ASOs believed to be significant.
4. FAA or the National Transportation Safety Board if the event effects their area of control at the national level.

(e) Route a DA Form 2696 pertaining to civilian operations as follows:

1. In cases involving civil aircraft or civil ATC, mail a copy of the report to the FAA Flight Standards District Office (FSDO) in the area of the hazard. Contact the Department of the Army regional representative (DARR) for the correct FSDO point of contact. For ACOMs, ASCCs, DRUs, and Army National Guard

(ARNG) outside the national airspace system, forward the report through the appropriate coordinating agency.

2. When FAA ATC facilities or operations are involved, mail the report to the appropriate DARR office.

3. When forwarding correspondence, request the results of the investigation, including corrective actions taken, be returned to the sender. State within the correspondence that DA Form 2696 information must be used for mishap prevention and safety purposes only.

(f) The U.S. Air Force and the U.S. Navy have similar hazard reporting systems. Army personnel should submit hazard reports directly to the base or station operations office while operating from any of these installations.

(g) Forward a copy of each report pertaining to Army ATC personnel, services, procedures, and equipment through the respective ACOM, ASCC, DRU, and ARNG to the Commander, U.S. Army Aeronautical Services Agency, 9325 Gunston Road, Building 1466, Suite N319, Fort Belvoir, VA 22060–5582.

(h) Return a copy of the report to the originator, provided the report includes the originator's name and address.

(i) Retain a copy of each report on file for 2 years.

c. Commanders ensure procedures are established to manage OHR program functions and ensure each report is quickly processed and appropriate corrective action taken. These management procedures should include:

(1) Emphasizing the importance of the OHR program as an RM tool.

(2) Promptly reporting and investigating hazards.

(3) Promptly correcting hazards.

(4) Emphasizing that the OHR program and flight violation reports are two separate systems that may be used simultaneously to enhance safety.

(5) Forwarding the DA Form 2696 to the next higher command when recommendations exceed the capabilities of the receiving unit.

(6) Reviewing and returning the completed DA Form 2696 to the ASO within 10 working days of the date the report was received.

d. ASOs are responsible for administering the commander's OHR program within their organizations. Management activities include:

(1) Actively promoting the OHR program.

(2) Maintaining an adequate supply of readily available DA Form 2696s, normally in flight operations and the maintenance areas.

(3) Receiving DA Form 2696s, analyzing hazards, and recommending control options to the commander.

(4) Completing DA Form 2696, block 11.

(5) Ensuring DA Form 2696s are promptly forwarded to the commander for action and returned to the ASO within 10 working days and that the completed action is returned to the originator within 20 working days of the date of receipt. In the event the action cannot be completed within 20 working days, return to the originator an interim report and provide an updated written report every 10 working days until the action is completed.

(6) Ensuring DA Form 2696s are prepared for verbally reported hazards.

e. Instructions for completing DA Form 2696 are as follows:

(1) *Items 1 through 9.* Check all applicable blocks and complete required information on the hazard. Block 2 must be complete if the submitter would like a response.

(2) *Item 10.* Describe the conditions and circumstances of the hazard. Describe the causes and provide corrective recommendations.

(3) *Item 11.* The appropriate ASO investigates the event using the 3W investigation process. Include the following information:

(a) Results of the examination and analysis of the conditions and circumstances.

(b) Reasons why the hazard occurred or was allowed to exist.

(c) Recommendations for eliminating, correcting, or controlling the hazard.

(4) *Item 12.* Completed by the commander best able to take corrective action/implement the developed controls.

(5) *Item 13.* Completed by the ASO investigating the hazard.

6–3. Foreign object damage

Foreign objects may cause material damage to a system or equipment rendering the system or equipment unusable, unsafe, or less efficient. FOD is damage to or malfunction of an aircraft caused by an object that is alien to an area or system or is ingested by or lodged in a mechanism of an aircraft or strikes the aircraft. Some examples of FOD are the ingestion of loose hardware or grass by an engine, flight controls jammed by hardware or tools, and tires cut or propellers or tail rotors damaged by debris on the ramp or taxiway.

a. The objective of an FOD prevention program is to find and correct potential hazards eliminating the causes of FOD. Training, worksite design, discipline, motivation, and follow up on FOD incidents are key factors of a sound program. All unit personnel have an active role in FOD prevention. Effective FOD prevention programs enhance combat readiness by saving material, manpower, and money. Well-managed FOD prevention programs are an essential part of each unit's aviation mishap prevention program.

b. Establish a general, written FOD prevention program that can easily be tailored to meet local operational conditions. Integrate FOD prevention tasks throughout unit garrison, tactical, and maintenance SOPs. Ensure all unit personnel are familiar with the FOD prevention program.

c. Aviation units should develop an FOD control checklist used by FOD prevention officers, NCOs, and unit personnel.

d. Management of the FOD program encompasses the following:

(1) Unit commanders establish an FOD prevention program tailored to the needs of the unit.

(a) Appoint an FOD prevention officer/NCO to implement the unit FOD prevention program. This may be an additional duty for any unit officer/NCO, other than the aviation maintenance officer.

(b) Ensure FOD prevention is an integral part of the unit safety program.

(c) Ensure unit personnel are aware of their responsibilities for FOD prevention.

(2) The FOD prevention officer/NCO—

(a) Administers the unit FOD prevention program.

(b) Monitors the unit tool accountability program.

(c) Delegates specific areas of responsibility (such as a hangar) to appropriate unit personnel.

(d) Conducts surveys/inspections of all unit areas (minimum once per month) and documents the results. Notifies the unit ASO of identified hazards unable to be corrected on the spot for entry into the hazard tracking system.

(3) Unit personnel implement the FOD prevention program by:

(a) Taking an active role in FOD prevention.

(b) Performing all maintenance tasks according to prescribed technical publications.

(c) Using the "clean as you go" approach to maintenance by making a thorough check of the area after each task is completed.

(d) Ensuring all aircraft openings, ports, lines, holes, ducts, and so forth are properly protected to prevent accidental foreign object intrusion.

(e) Ensuring all tools, hardware, and other equipment is properly accounted for at the end of each maintenance operation; mark tools for ease of accountability.

(f) Inspecting all equipment prior to use to ensure it will not cause damage.

(g) Checking engine inlet screens for loose, trapped, or broken objects that may produce FOD.

(h) Immediately reporting FOD and suspected FOD to the first-line supervisor.

(i) Placing all residue and objects that may produce FOD in the proper container.

e. All personnel are encouraged to recommend new ways to prevent FOD. Send suggestions to Commander, U.S. Army Combat Readiness Center (CSSC–OA), Fort Rucker, AL 36362–5363. To obtain publicity material promoting FOD control within the unit, contact Commander, U.S. Army Combat Readiness Center (CSSC–SM), Fort Rucker, AL 36362–5363.

6–4. Pre-mishap plan

a. Commanders ensure the following:

(1) In the event of an Army aircraft mishap (Class A through C and selected Class D), all crewmembers and any other personnel who may have contributed to the mishap are promptly moved by MEDEVAC assets (aeromedical or ground ambulance, whichever is fastest and safest), to facilities where physical examinations and blood and urine testing will be accomplished under the provisions of AR 40–8, AR 40–21, AR 40–501, AR 600–105, and DA Pam 385–40. Apparent absence of injury is not a factor in

determining how or when to move personnel to medical facilities. The dynamics involved in an aircraft mishap may produce injuries that are found only with a detailed medical examination.

(2) The development of detailed written pre-mishap plans specifying duties, responsibilities, and immediate actions for personnel involved in mishap notification procedures, search and rescue, mishap investigation, and equipment recovery.

(3) The unit operations officer develops, administers, reviews, and rehearses the pre-mishap plan with the technical assistance of the unit ASO.

b. Pre-mishap plans—

(1) Interface with airfield/installation and higher headquarters plans. Units/facilities on non-Army and non-DoD airfields ensure plans are coordinated with appropriate local authorities and comply with applicable Army and DoD requirements.

(2) Focus on organized rescue of personnel, protection of property, preservation of the mishap scene, and notification of appropriate personnel.

(3) Address both garrison and field/deployment operations.

(4) Address actions for both ground and aviation mishaps.

6–5. Standard operating procedures

Commanders should ensure that an SOP is developed and maintained for unit functional areas and operations executed in the command. Consolidate the SOP, where applicable, at the battalion/squadron or regiment/BDE/group level. Integrate the systematic RM process in all unit operational procedures. Integrate command approved risk control options into the SOP as task performance standards. At a minimum, address the following subjects in the SOP if they are applicable to the unit mission:

a. Terrain flight hazard avoidance.

b. Instrument flight and inadvertent instrument meteorological conditions procedures.

c. Passenger- and troop-carrying operations.

d. External and internal cargo operations.

e. Gunnery operations.

f. Night operations.

g. Use and maintenance of night vision devices.

h. Operations in a tactical environment.

i. Parachute operations.

j. Infiltration/exfiltration techniques (rappelling, fast rope infiltration and extraction system, special purpose insertional extraction system, and so forth).

k. Multi-aircraft operations.

l. Forward area refueling and rearming.

m. Aviation life support systems.

n. Aircraft survivability equipment use and maintenance.

o. FOD prevention.

p. Responsibilities of aircrews when involved in a mishap.

q. Aircraft maintenance procedures.

r. Maintenance shop operations.

s. Hazardous material handling.

t. Hazards communication program.

u. Aviation mission RM process.

v. Command and control procedures with the ground commander.

w. Fatigue/rest management procedures.

x. Extreme environmental operations (blowing snow, desert, over-water, and so forth).

y. Protection of equipment from severe weather and environmental hazards.

z. Contractor flight operations.

aa. Special/unique operations not covered by existing written procedures such as external refuel systems.

6–6. Safety-related programs

Safe operation and maintenance of Army aircraft requires that all aspects of applicable Army safety programs be implemented within the aviation unit. Safety-related programs and guidance include, but are not limited to, the following:

a. Fire prevention and protection: local directives, AR 385–10, AR 420–1, 29 CFR 1910.106, and 29 CFR 1910.252.

b. Hazard communication: DoDI 6050.05 and 29 CFR 1910.1200.

c. Hearing conservation: DA Pam 40–501 and AR 40–5.

d. Respiratory protection: AR 11–34 and 29 CFR 1910.134.

e. Radiological protection: AR 385–10, TB 43–0108, TB 43–0116, TB 43–0133, TB MED 524, 29 CFR 1910.1096, and 29 CFR 1910.97.

f. Protective clothing and equipment: AR 385–10, 29 CFR 1910, 29 CFR 1910.19, 29 CFR 1910.133, 29 CFR 1910.135, 29 CFR 1910.137, 29 CFR 1910.156, and 29 CFR 1910.252.

g. Hazardous material handling: AR 200–1, AR 385–10, AR 700–141, AR 700–143/DLAR 4145.41/NAVSUPINST 4030.55D/AFMAN 24–210_IP/MCO 4030.40C, AR 700–68/DLAI 4145.25/NAVSUPINST 4440.128D/AFJMAN 23–227(I)/MCO 10330.2D, AR 710–2, TM 38–250, TM 38–410, NFPA 30, and 29 CFR 1910 Subpart H.

h. Aviation maintenance: DA Pam 738–751, AR 750–1, and TM 1–1500–328–23.

i. Ammunition/explosives/weapons handling: DA Pam 385–64 and AR 385–10.

j. Aviation life support systems: AR 95–1 and TC 3–04.10.

k. Environmental protection: local guidance and AR 200–1.

l. Fighter management: local guidance and AR 600–55.

Chapter 7
Public, Family, Child and Youth, Off-Duty Recreation, and Seasonal Safety

7–1. Introduction

The Army is committed to the safety of Soldiers, their Families, volunteers supporting installation activities, and the public in all aspects of recreational and seasonal safety. The loss of a Soldier during recreational activities has the same effect on unit readiness as a loss during military operations. AR 385–10 establishes the requirement to develop, implement, and maintain a recreational activity safety program.

7–2. Recreational safety

a. Sports, physical training, and recreation play a key role in maintaining the Army as a premier fighting force. Competitiveness, a natural part of sports, contributes to the physical and mental growth of Soldiers. Well-designed and executed sports, physical training, and recreational programs improve morale.

Note. Throughout this pamphlet the term “sports and recreation” encompasses sports, physical training, and recreational activities.

b. Recreational safety programs focus attention on the hazards associated with many recreational and sport activities. Uncontrolled, these hazards may precipitate mishaps resulting in the injury or death of participants. Most injuries from sports and recreational activities are relatively minor: bruises, cuts, sprains, and strains. However, these minor injuries contribute to the temporary loss of manpower and less effective on-the-job performance. Recreational activities include nonphysical related activities associated with recreation centers, arts and crafts facilities, library activities, and so forth as well as physical activities.

c. Many recreational activities involve athletic or sporting events of some kind. Recreational activities frequently involve varying degrees of risk. Activities involving frequent contact with other players or equipment significantly increases the risk of injury.

(1) Football (tackle, followed by flag football) results in the highest number of injuries, followed by baseball/softball and basketball.

(2) When a sport is unsupervised, the number of injuries tends to increase (for example, street basketball and pickup baseball).

(3) Unsupervised individual sporting activities tend to have more fatalities. Examples include hiking, boating, fishing, and hunting.

(4) Five basic causes attributed to sports injuries are:

(a) Not following the rules.

(b) Lack of skill and ability.

(c) Not using proper PPE.

(d) Inadequate physical conditioning for the activity pursued.

(e) Inadequate warm up/cool down.

(5) The most effective means of preventing sports and recreational injuries is through the coordinated, unified effort of all involved: Army agencies, units, and individuals. The commander should take the lead to meld the separate organizations together in the pursuit of safety.

(6) The "weekend player" syndrome is typical of the person who is not in condition for the activity at hand. By not participating in physical activity that prepares the body for sport/play activities, the person risks over-stressing muscles, heart, and other body parts to the point that injury may occur.

(7) Commanders, directors, and supervisors should encourage personnel to adequately prepare for the mental and physical stress of their anticipated sports and recreational activities.

(8) Prior to participating in physically demanding sports or wellness/health and fitness programs, a physical examination should be performed by medical personnel (preferably a medical officer) to ensure there are no unknown factors that might place the participant at higher risk of injury.

(9) For some activities, such as football, the senior commander may require a medical examination each year to ensure each participant is physically able to take part.

(10) Build physical conditioning into the recreational program to bring all participants to a similar level of physical readiness.

(11) Commanders, directors, and supervisors of sports and recreational activities and operations are responsible for ensuring recreational areas are safe and maintained to the extent required for safe use.

(12) The facility manager should ensure that recreational areas are safe and maintained to the extent required for safe use. A formal risk assessment should be part of the planning process.

(13) Planning for sports activities should include deciding what equipment and facilities are required. Equipment available for use by Soldiers, dependents, and the public must meet applicable American National Standards Institute (ANSI), DoD, U.S. Department of Transportation (DOT), and Army safety standards. This applies to swimming equipment and equipment used for activities (baseball, volleyball, softball, football, and so forth). Safety equipment at recreational locations should meet these standards, have up to date inspections, and be present when the facility is used. Examples are:

(a) Rescue equipment (rings and poles) at swimming pools and areas.

(b) Proper bats for baseball/softball (such as bats not made of titanium and approved headgear for batters).

(c) Hearing and eye protection.

(d) Well-maintained rental equipment.

(14) The commander should establish policies prohibiting the use of alcohol by participants of any motor sports such as boating, off road racing, and so forth. Monitor alcohol use by participants in any recreational activity.

(15) The commander's SOH staff should assist leaders supervising sports and recreational activities to integrate the RM process into all aspects of the planning and execution of sports, physical training, and recreational activities.

(16) The commander should ensure the schedules for sporting activities are reasonable in that teams and players are evenly matched. When one team overpowers another, the opportunity for injury increases dramatically. Scheduling should also allow for sufficient practice and conditioning time to get the players in good physical shape for playing and to ensure they know how to play the game, including the rules and proper use of safety equipment.

(17) Officials who enforce the rules play a key role in the reduction of injuries. However, coaches and supervisors must set the example by ensuring the players follow the rules and play accordingly.

(18) Should a mishap occur:

(a) The first priority is to render the appropriate first aid to the injured person.

(b) Report mishaps through the injured Soldier's chain of command.

(c) At the local level, analyze mishap information for future mitigation. Use mishap history when stressing the importance of safety to participants.

7–3. Other activity recreational safety

a. Activities in this category fall into indoor and outdoor categories. Horseshoes, volleyball, badminton, tennis, and shuffleboard exemplify outdoor activities. Indoor activities include table tennis, darts, billiards, air hockey, and so forth. Other recreational activities also include shops where Soldiers can work on their motor vehicles, wood working shops, and ceramic kilns. Examples of hazards are:

(1) Lifting of heavy material.
(2) Respiratory hazards (air contaminants such as dust and mists from paints).
(3) Objects dropped on the hands, feet, or other part of the body.
(4) Noise.
(5) Flying objects.
(6) Hazardous materials (such as chemicals, acids, and so on).
(7) Sharp tools.
(8) Weather conditions.

b. Staff personnel responsible for specific activities should develop risk assessments for each activity and train participants in application of the developed controls. Staff personnel monitoring and/or supervising the area have the responsibility to ensure the safe operation of equipment and conduct of the activity. To counter the hazards that are present during recreational activities, it is necessary to:

(1) Establish understandable rules that are posted and available for review by all participants.
(2) Prominently post operational instructions and safety warnings/cautions for machinery and games.
(3) Train staff personnel on all equipment and tools in their area.
(4) Train operators of power machinery and tools on proper operation and use of appropriate safety equipment (such as goggles for sanders).
(5) Inspect all machinery, tools, and recreational items prior to use and perform required daily maintenance prior to use.
(6) Remove all defective equipment from service until repairs are completed.
(7) Require personnel utilize the appropriate PPE to use equipment, tools, and game items. This equipment has to be suitable for the activity and the environment in which it is used.
(8) Regularly inspect the activity area and provide guidance on:
(a) Safe operation of equipment and tools.
(b) Proper use of PPE.
(c) Removal of personnel using equipment in an unsafe manner.
(d) Personnel following and adhering to facility SOPs.
(9) Upon cessation of activities, clean tools, machinery, and game equipment if necessary and return to the proper storage area. Report any problems or failures encountered to the staff for corrective action and maintenance as required.

Chapter 8
Standing Operating Procedures for Hazardous Operations

8–1. Introduction

a. Every effort is taken to eliminate, control, or reduce hazards and associated risks through other methods of the correction precedence. However, far too often reliance must be placed on adopting procedures as a control method. Therefore, it is important that a method be established to ensure tasks are executed in an efficient, effective, and safe manner.

b. SOPs are written procedures that must be followed when performing a task. An SOP is required when tasks are complex or involve hazardous materials. A correctly developed SOP leads to work that is performed satisfactorily and efficiently with minimal risk and the highest possible levels of safety. An SOP should be designed to provide safety, security, and environmental protection.

8–2. Purpose

This chapter establishes guidelines for developing, writing, and implementing industrial operation SOPs and describes a method to perform hazardous operations in an efficient, effective, and safe manner based on collective experience and knowledge. Agreement by the SOP developers will be based on their assessment of the safest and most logical way to perform a given task. This chapter provides guidance in support of AR 385–10.

8–3. Applicability

This chapter applies to all Army hazardous operations, except for administrative tasks, involved in execution of missions and processes. Written standards (for example, work plans, internal operating plans, operating manuals, work instructions, field manuals, technical manuals, lesson plans, and so on) may be

substituted for SOPs when they provide the necessary level of detail to execute the task in an efficient, effective, and safe manner.

8–4. Standing operating procedure criteria

A well-written SOP provides detailed procedures and must meet specific criteria to be acceptable. These criteria include:

a. The procedural steps must be in logical sequence. Work space and equipment used must be available for the work process. The SOP should include the initial steps required to obtain the necessary equipment or verify it is present and operational.

b. The safety procedures must protect the worker and the environment throughout the process.

c. Risk must be identified and the appropriate steps required to mitigate the risks included and explained.

d. Describe the most efficient possible process that results in a useful outcome/product.

8–5. Standard operating procedure developers

SOP developers should consist of a team of experienced personnel with knowledge of the process at hand and available safety, environmental, logistics, quality assurance, F&ES, engineering, and production personnel. Unclassified or nontrade secret SOPs should be coordinated with the appropriate federal, state, and local emergency response authorities and any established local emergency planning committees.

8–6. Writing the standard operating procedure

When writing an SOP, the author should take into account the work environment, supplies needed to perform the task, safety equipment and clothing, and types of hazards. The SOP should meet the criteria described in paragraph 8–4 and be written using the following procedures.

a. When observing the task, remain in the area long enough for the personnel to get comfortable with your presence. This should help ensure the personnel perform the task as normal. Ensure they understand you are there to observe the task to develop an SOP. Ensure personnel know they may comment on the task and offer suggestions to improve the task. Observe the person(s) performing the task. If the task/process involves hazardous materials, the individual should walk through the steps without actually performing the task and not using hazardous material during the walkthrough.

(1) The individual performing the task should be knowledgeable of what is required.

(2) The supervisor should be involved to ensure that no steps are overlooked and to provide higher levels of assurance that the process is being performed correctly during the walkthrough.

b. During the walkthrough, the safety person should observe and make note of any hazards that may occur during the task.

(1) Document, as part of the SOP, the hazard assessment of the task and develop countermeasures to eliminate or control the hazards.

(2) Identify any need for specific PPE and other protective equipment.

(3) The process engineer should be involved to provide insight on the proper use of equipment and the procedures to be followed should an anomaly occur (for example, pressure unit begins to approach dangerous operating levels) and the steps to be taken to rectify the situation. The effect of these anomalies on the process should be determined, as well as any changes in the level of risk.

c. Describe each step in the task using the smallest substeps required to define the flow of the task. Procedures will fulfill the following criteria:

(1) Procedure successfully directs the user to accomplish its objective.

(2) Procedures are usable.

(3) Procedures are accurate.

(4) Procedures are written in accordance with appropriate standards and regulations.

(5) Procedures contain the appropriate level of detail and present all-important information without presenting superfluous information.

(6) Equipment labels and markings cited in the SOP correspond with actual hardware.

(7) Procedures will be written in short, simple words and sentences, using a vocabulary appropriate for the user performing the task.

(8) For SOPs that address tasks in areas containing munitions or explosives, contingency planning, emergency preparedness, and security will be addressed. Clearly describe procedures for promptly notifying emergency response and environmental agencies should a detonation occur.

d. SMEs from both within and external to the performing organization must review the draft SOP for completeness and accuracy. Each step of the procedure should be included, along with the safety precautions and equipment (both PPE and other equipment required at each step). Once the SOP has been through an informal desktop review, the final draft will be prepared.

8–7. Review-concurrence

a. Develop a process to have personnel with specialized knowledge (safety, environmental, logistics, quality assurance, F&ES, engineering, and so on) review the SOP for clarity, compliance with standards and regulation, and conformity with accepted practices in their specialty area. After review and update, an operator should walk through the process with the SOP open. Systematically follow the SOP in performing the task. This final verification is required before finalizing the SOP.

b. The cover sheet with the draft and final version of the SOP should contain the following information:

(1) Activity name.

(2) Name of process.

(3) Unique SOP number.

(4) Date of SOP.

(5) Name of preparer, title, and phone number.

(6) Signatures of individuals responsible for reviewing and concurring with SOP; include office titles (safety, environmental, quality assurance, F&ES, engineering, and so on).

(7) Name and title of approving authority and date of approval.

c. Originators of the SOP should concur with the SOP prior to the approving authority signing the SOP.

8–8. Review date

Review all SOPs annually.

8–9. Supervisor statement

Supervisors and personnel who perform the process described in the SOP should read and sign the SOP indicating they understand the processes. The supervisor/person in charge should sign the statement—

a. When first assigned to supervise the task/process.

b. When beginning an operation that has not been performed in the previous 90 days.

c. When changes are made to the SOP.

d. Annually when performing an operation on a continuous basis.

8–10. Accessibility of standing operating procedures

SOPs for the task should be readily available to supervisors and operators. Post the SOP for explosives and chemical operations in the work area.

8–11. Standing operating procedure index

Maintain an index of all approved SOPs. Staff inactive SOPs through the entire approval process before use. The index should contain the following information:

a. SOP number.

b. Title of SOP.

c. Name of office submitting SOP.

d. Date of approval.

e. Next review date.

8–12. Confirmation of use

Supervisors should use the SOP during training of personnel. During day-to-day operations, the supervisor should verify that operator personnel are following SOP requirements.

Chapter 9
Army Guidelines for Safety Color Codes, Signs, Tags, and Markings

Section I

General

9–1. Purpose
This chapter establishes procedures to implement the ANSI standard for safety color codes, signs, tags, and markings for the Army. The specifications for signs and tags apply to the design, application, and use of signs or symbols intended to indicate and/or define specific hazards of a nature such that failure to designate them may lead to injury or property damage. These specifications are intended to cover all safety signs, except those designed for streets, highways, railroads, and marine regulations. This chapter does not apply to bulletin boards or safety posters.

9–2. Color codes
Color codes used on safety signs, labels, and tags, as well as for the identification and location of fire extinguishers, first aid kits, traffic aisle ways, changes in elevation, tripping hazards, and so forth have been developed in the past by a large number of industrial firms and other organizations. Uniformity of color codes used on safety signs, labels, and tags can be a major issue with the various number of military, industrial, and construction operations existing on Army installations. As a result, too many colors appearing simultaneously in the visual field can be both confusing and fatiguing. All new signs and replacements of old signs should be in accordance with this chapter.

9–3. Engineering or administrative controls
This chapter is not a substitute for engineering or administrative controls, including training, to eliminate identifiable hazards.

9–4. Illumination
Colored safety signs equipped with illumination devices should be lit to a level where the color is not distorted and the precautionary message is clearly conveyed.

9–5. Optimum visibility
To ensure optimum visibility, colors selected for safety signs should have maximum color contrast, especially lightness contrast. Likewise, contrast should be achieved between the sign and its visual environment. Thus, dark colors (red, brown, green, blue, and purple) should be used with white letters, while light colors (orange and yellow) are better seen contrasted with black.

9–6. Training and notification
All supervisors should ensure personnel working or entering into their area of responsibility are briefed/trained on what hazards and controls are in their work area and what precautions should be taken.

Section II

Specifications for Mishap Prevention Signs

9–7. Safety color coding
The following colors are intended for use on safety signs, symbols, and safety messages in collateral materials, as set forth by the ANSI Z535 series standards:

a. Red identifies danger and stop.

b. Orange designates warning.

c. Yellow designates caution. Solid yellow, yellow and black stripes, or yellow and black checkers should be used for maximum contrast with particular background.

d. Green designates safety, emergency egress, and the location of first aid and safety equipment.

e. Blue identifies safety information used on informational signs and bulletin boards.

f. Purple is not yet assigned.

g. Gray is not yet assigned.

h. Black, white, yellow, or combinations of black with white or yellow are used to designate traffic or housekeeping markings.

9–8. Safety sign colors

a. Standard safety colors should comply with ANSI Z535.1.

b. Signal word panel colors—

(1) DANGER. White letters on a red background.

(2) WARNING. Black letters on an orange background.

(3) CAUTION. Black letters on a yellow background.

(4) NOTICE. Italicized white letters on a blue background.

(5) SAFETY INSTRUCTIONS. White letters on a green background.

9–9. Hazard classifications of signs

Hazard-alerting signs are classified according to the relative seriousness of the hazardous situation. The classification is based on the probability of being injured if the hazard is not avoided and on the severity of the resulting injury. For hazard-alerting signs, there are four hazard classifications that are denoted by the signal words "DANGER," "WARNING," and "CAUTION."

a. DANGER indicates an immediately hazardous situation, which, if not avoided, should result in death or serious injury. DANGER is limited to extreme situations.

b. WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

c. CAUTION indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury. CAUTION may also be used to alert against unsafe practices.

d. CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

e. NOTICE indicates a statement of policy, as the message relates directly or indirectly to the safety of personnel, or protection of property.

f. GENERAL SAFETY indicates general instructions relative to safe work practices, reminders of proper safety procedures, and the location of safety equipment.

g. FIRE SAFETY indicates the location of emergency firefighting equipment.

h. The other two classifications are directional arrow signs and special signs.

i. In accordance with ANSI Z535.2, standard safety alert symbols should be used in conjunction with the signal words DANGER, WARNING, or CAUTION.

9–10. Selection of appropriate hazard sign (risk estimation)

Selection of the appropriate hazard sign involves considering the probability and severity of outcomes that can result from a hazardous situation and combining these estimates to determine the risk. RM should be used to determine the appropriate hazard sign.

9–11. Wording of signs

Ensure that the wording on all signs uses the following guidelines:

a. Wording is concise and easy to read. Lettering should be of a size that enables a person with normal vision, including corrected vision, to read the safety sign message panel text at a safe viewing distance from the hazard.

b. Wording contains enough information to be easily understood.

c. Wording is designed for the message to be carried in the form of a picture, when appropriate.

d. Wording is positive rather than negative, when possible. For example, "Wear rubber gloves when handling" is preferable to "Do not handle without rubber gloves."

e. Signal words should be in sans serif letters in uppercase only. The signal word NOTICE should appear in italicized sans serif letters in uppercase only.

f. Message panel lettering should be a combination of upper and lowercase letters. Uppercase only lettering may be used for short messages or emphasis of individual words.

g. Determination of safe viewing distance for the message panel text should take into consideration a reasonable hazard avoidance reaction time.

h. Signal word letter height should be at least 50 percent greater than the height of a capital H in the majority of the message panel wording.

i. Wording should be bilingual, where appropriate.

j. Message panel colors should be used as follows:

(1) *Safety equipment location signs.* White letters on green background.

(2) *Fire equipment location signs.* White on a red background.

(3) *Safety alert symbol.* Solid triangle portion should be the same color as the signal word lettering, and the exclamation mark placed on a yellow triangle.

(4) *Biological hazard.* Fluorescent orange or orange-red, or predominately so, with lettering or symbols in a contrasting color.

(5) *Hazard-alerting, safety notice, and safety instruction signs.* The message panel should have either black lettering on a white background or white lettering on a black background.

(6) *Safety equipment location signs.* The message panel should have either white letters on a green background or green or black letters on a white background.

(7) *Fire safety equipment location signs.* The message panel should have white safety symbols on a red background or red symbols on a white background.

(8) *Symbol panel colors.*

(a) Hazard-alerting signs, safety notice signs, and safety instruction signs should have a black symbol on a white background. Other colors may be used for safety symbol emphasis, such as red for fire, or if surround shapes are used.

(b) Safety equipment location signs should have white safety symbols on a green background or green or black symbols on a white background.

(c) Fire equipment location signs should have white safety symbols on a red background or red symbols on a white background.

9–12. Danger signs

a. Use. Use a danger sign only when an immediate hazard exists. There should be no variations in the type or design of signs posted to warn of specific dangers. All personnel should be taught that danger signs indicate immediate danger and special precautions are necessary.

b. Design. Paints with phosphorescent or retro-reflective content may be used when safety considerations justify the need for assuring visibility of signs in darkened areas or at night. Design danger signs as follows (see fig 9–1):

(1) Danger signs have a white background with the word DANGER appearing in white letters on a red oval. The red oval is placed inside a black rectangular panel. (A white line separating the outside edges of the red oval from the adjacent edge of the black panel may be used.)

(2) The black rectangular panel should be placed at the top of the sign. Wording on the sign should be in black letters on the white background.

(3) The size of the red oval containing the word DANGER and the size of the letters used for the word DANGER should vary with the outside dimensions of the sign.

Figure 9–1. Example danger sign (this graphic should be seen in color for complete clarity)

c. Wording. Danger signs should be worded to warn of specific dangers only. Keep sign wording as brief as possible, but convey all necessary information. The wording may include what the danger is, where it is, and how to avoid it. See table 9–1 for examples of wording.

Table 9–1
Examples of wording for danger signs

DANGER–High Voltage (state maximum voltage when greater than 500 volts)
DANGER–No Smoking, Matches, or Open Flame
DANGER–Men Working Above
DANGER–Keep Away From Transformer
DANGER–Eye Protection Required in This Area
DANGER–Crane Overhead
DANGER–Keep Off Pole
DANGER–Use No Open Light–Flammable
DANGER–Artillery Firing in Progress
DANGER–Small Arms Firing in Progress
DANGER–Ammunition Dud Area
DANGER–Blasting
DANGER–Extreme Noise Hazardous Area–Both Plugs and Muffs Required
DANGER–Extreme Noise Hazardous–Both Plugs and Muffs Required When Operating

Table 9–1
Examples of wording for danger signs—Continued

DANGER–Permit Required–Confined Space

9–13. Caution signs

a. Use caution signs only to warn against potential hazards or to caution against unsafe practices. All personnel should be taught that a caution sign indicates a possible hazard against which proper precautions should be taken.

b. Design caution signs as follows (see fig 9–2):

(1) Caution signs have a yellow background. The word CAUTION appears in yellow letters on a black rectangular panel.

(2) The black rectangular panel should be placed at the top of the sign.

(3) The size of the black rectangular panel containing the word CAUTION and the size of the letters used for the word CAUTION vary with the outside dimensions of the sign.

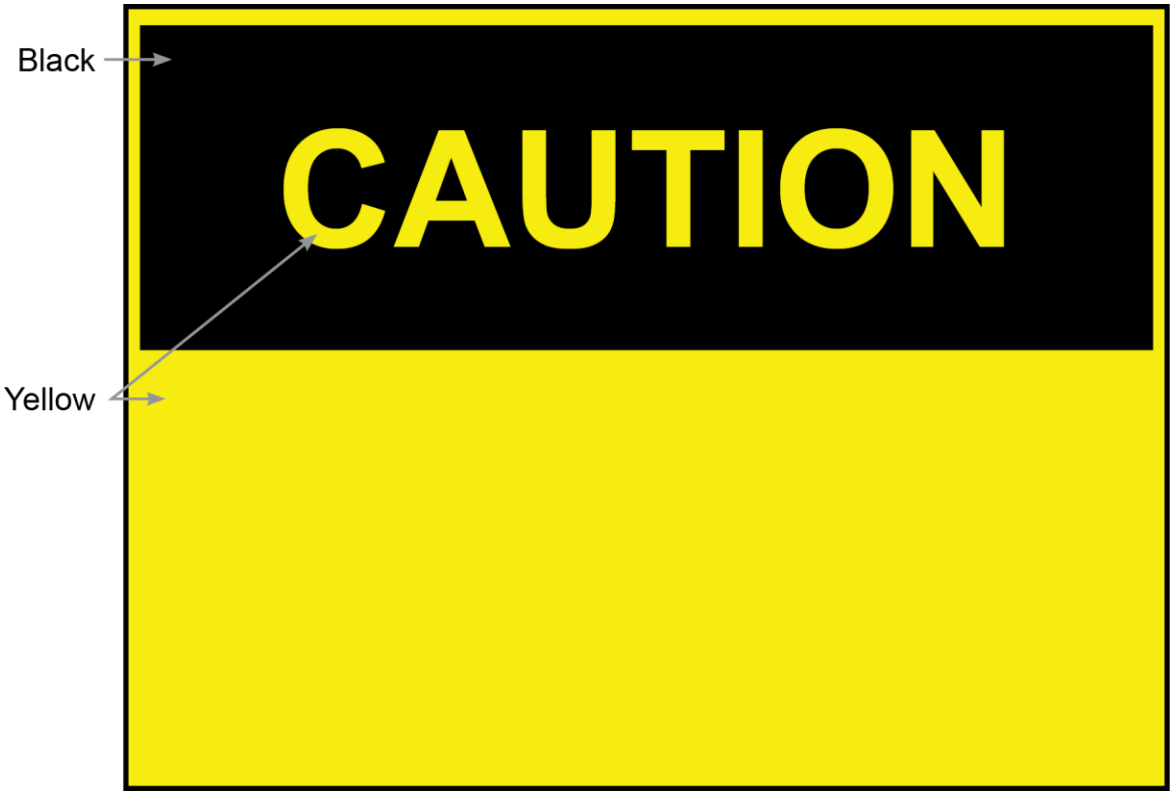


Figure 9–2. Example caution sign (this graphic should be seen in color for complete clarity)

c. Caution signs should be worded to warn of possible dangers or unsafe practices. See table 9–2 for examples of wording.

Table 9–2
Examples of wording for caution signs

CAUTION–Keep This Door Closed
CAUTION–Electric Trucks, Go Slow
CAUTION–Keep This Space Clear
CAUTION–Stop Machinery to Clean, Oil, or Repair

Table 9–2
Examples of wording for caution signs—Continued

CAUTION–Wear Snug-Fitting Clothing While Operating This Machine
CAUTION–Keep Aisles Clear
CAUTION–Flammable–No Smoking Within 50 Feet
CAUTION–Gasoline Shall Not Be Used as a Cleaning Fluid
CAUTION–Close Clearance
CAUTION–Watch Your Step
CAUTION–Electric Fence
CAUTION–Noise Hazardous Area–Hearing Protection Required While Equipment Running
CAUTION–Hearing Protection Required Beyond This Point
CAUTION–Noise Hazardous Equipment–Hearing Protection Required When Operating
CAUTION–Noise Hazardous Area–Hearing Protection Required Within _____Feet
CAUTION–Noise Hazardous Equipment–Hearing Protection Required Within _____Feet
CAUTION–Ultraviolet Light–Wear Eye Protection

9–14. Safety instruction signs

a. Use. Use safety instruction signs when there is a need for general instructions and suggestions relating to safety.

b. Design. Design safety instruction signs as follows (see fig 9–3):

(1) Safety instruction signs have a white background. Words such as THINK or BE CAREFUL are in white letters on a green rectangular panel.

(2) The green panel should be placed at the top of the sign.

(3) The sign wording is placed below the panel in black letters on a white background.

(4) The size of the green panel and the size of the letters for the word or words vary with the outside dimensions of the sign.

Figure 9–3. Example safety instruction sign (this graphic should be seen in color for complete clarity)

c. Wording. Safety instruction signs should be worded to provide information relating to general safe practices. See table 9–3 for examples of wording.

Table 9–3
Examples of wording for safety instruction signs

Report All Injuries to the First Aid Room at Once
Walk, Don't Run–Avoid Injury
Report All Injuries No Matter How Slight
Make Your Workplace Safe Before Starting the Job
Report All Unsafe Conditions to Your Foreman
Keep This Plant Clean and Safe
Lock Out Controls Before Making Electrical Repairs
Number of Consecutive Days Without a Disabling Injury (_____)
Three Causes of Injury: I Didn't Look, I Didn't Ask, I Didn't Listen

9–15. Safety symbols

Safety symbols should be used whenever practical to do so. A safety symbol is a configuration consisting of an image, with or without a surround shape, which conveys a message without the use of words. It may represent a hazard, a hazardous situation, a precaution to avoid a hazard, a result of not avoiding a hazard, or any combination of these messages. There are four types of safety symbols that communicate different messages: hazard alerting, prohibition, mandatory actions, and information (see fig 9–4 for examples).

a. Hazard alert symbol. This is the general warning symbol. It is used to alert the user to potential hazards. All safety messages that follow this symbol should be obeyed to avoid possible harm.

b. Prohibition symbol. This type of safety symbol conveys actions that should not be taken or should be stopped. For prohibition, use of the surround shape is mandatory.

c. Mandatory symbol. This type of safety symbol conveys actions that should be taken to avoid hazards. If a surround shape is desired, the symbol should consist of a white image within a solid safety blue circular surround shape.

d. Information symbol. This type of safety symbol is generally used on general safety or fire safety signs to convey equipment location, egress, permitted actions, and fire equipment location.

e. Symbol and message. Two panel signs can be used to display both the symbol and the message. When symbols are used with a word message, safety symbols should be compatible with the word message. A symbol may only be used to substitute for a portion or all of a word message if it has been demonstrated to be satisfactorily comprehended or if there is a means (for example, instructions, training materials, manuals, and so forth) to inform personnel of the symbol's meaning.

Symbol	Usage
 Hazard Alert	This is the general warning symbol. It is used to alert the user to potential hazards. All safety messages that follow this symbol shall be obeyed to avoid possible harm.
 Prohibition	This type of safety symbol conveys actions that should not be taken or should be stopped. For prohibition, use of the surround shape is mandatory.
 Mandatory	This type of safetysymbol conveys actions that should be taken to avoid hazards. If a surround shape is desired, the symbol should consist of a white image within a solid safety blue circular surround shape.
 Information	This type of safety symbol is generally used on general safety or fire safety signs to convey equipment location, egress, permitted actions and fire equipment locations.

Figure 9–4. Examples of safety symbols (this graphic should be seen in color for complete clarity)

9–16. Signs for slow-moving vehicles

a. Use. Use signs or emblems to identify vehicles that, by design, move slowly (25 miles per hour or less) on public roads and streets. These signs or emblems are neither a clearance marker for wide machinery nor a replacement for required lighting or marking of slow-moving vehicles.

b. Design. These signs consist of a fluorescent yellow-orange triangle with a dark, red reflective border. The fluorescent triangle is a highly visible color for daylight exposure. The reflective border defines the shape of the fluorescent color in the daylight and creates a hollow, red triangle in the path of motor vehicle headlights at night. Figure 9–5 is an example of a sign for a slow-moving vehicle.

c. Wording. These signs should have no letters or words. Do not alter the pattern, sign dimensions, or the backing to permit advertising or other markings.

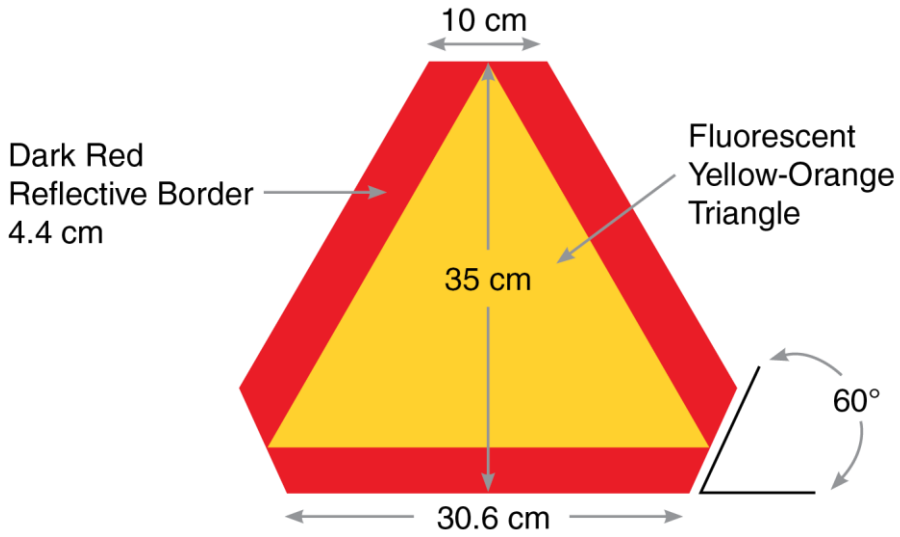


Figure 9–5. Example of slow-moving vehicle symbol (this graphic should be seen in color for complete clarity)

9–17. Placement of signs

a. Signs should be placed to alert and inform all personnel of hazards in sufficient time to avoid the hazard and take appropriate action. All personnel should be able to see the sign at a safe viewing distance (see table 9–4).

b. Signs should be placed so they are legible, do not create a distraction, and are not a hazard in themselves.

c. Safety signs should not be located in areas where they may be removed by the motion of the hazardous device or rendered ineffective by situational conditions of the hazard. Moveable panels such as doors, windows, racks, gates, and so forth should not block these alerting devices.

d. Safety signs should be displayed with illumination, as needed, for adequate legibility under normal operating conditions. For situations other than normal operating conditions, such as emergency conditions, power failure, and so forth, where illumination may be interrupted, the sign should be made with photo luminescent and/or retro-reflective materials, and/or equipped with emergency lighting.

(1) DANGER indicates an immediately hazardous situation which, if not avoided, should result in death or serious injury.

(2) DANGER should be used sparingly, and only for those situations presenting the most serious hazards.

Table 9–4
Placement of signs

Signal word letter height (inches)	Viewing distance (feet)
5.00	62.50
4.50	56.25
4.00	50.00
3.50	43.75
3.00	37.50
Signal word letter height (inches)	**Viewing distance (feet)**
2.50	31.25
2.00	25.00
1.50	18.75

Table 9–4
Placement of signs—Continued

1.00	12.50
0.75	09.375
0.50	06.25
0.25	03.125

9–18. Hearing protection signs, labels, and decals

a. Use. Use hearing protection signs, labels, and decals to warn personnel of hazards associated with exposure to high-intensity noise and the need to wear hearing protection.

b. Posting.

(1) Noise hazardous areas should be posted as follows:

(a) Post entrance to, or periphery of, noise hazardous areas (85 to 100 A-weighted decibel (dBA)) with appropriate CAUTION sign (see table 9–2 for sample wording).

(b) Post entrance to, or periphery of, extremely noise hazardous areas (101 to 108 dBA) with the appropriate DANGER sign (see table 9–1 for sample wording).

(2) Noise hazardous equipment should be posted as follows:

(a) Post noise hazardous tools and equipment (85 to 100 dBA) with the appropriate CAUTION sign, label, or tag (see table 9–2 for sample wording).

(b) Post extremely noise hazardous tools and equipment (101 to 140 dBA) with the appropriate DANGER sign, label, or tag (see table 9–1 for sample wording).

(3) Post all firing ranges and other impulse noise areas (140 dBA and above) with appropriate DANGER signs. Indicate 140 decibels peak (dBP) noise contours with applicable DANGER signs. For noise hazardous areas or equipment that exceed 108 dBA or 165 dBP, consult the local installation medical authority for proper posting procedures. Daily exposure limits may be imposed. Also, hearing protection requirements for a particular piece of equipment may be defined in a health hazard assessment report and these recommendations should be published in the user's documents (for example, technical guides and manuals).

c. Design.

(1) Hearing protection DANGER signs should conform to the specifications in figure 9–1.

(2) Hearing protection CAUTION signs should conform to the specifications in figure 9–2.

(3) Hearing protection CAUTION and DANGER tags should be self-adhesive vinyl. They should appear proportionately identical to corresponding signs.

(4) Hearing protection CAUTION and DANGER tags should follow the criteria in 29 CFR 1910.145. Alternatively, CAUTION and DANGER labels may be affixed to a plain manila tag and used in place of a preprinted tag.

d. Wording. Use wording on signs, labels, and tags according to tables 9–1 and 9–2.

e. Pictures. The use of pictures or internationally recognized symbols on signs, labels, and tags is permitted, providing the intent of the message remains clear.

9–19. Vision protection signs, tags, and decals

a. Use. Use vision protection signs, tags, and decals to warn personnel of potential or actual vision hazards associated with machinery and equipment and to direct that appropriate protective measures be taken. Use warnings not only for physical hazards, but also for laser and high-intensity light sources such as carbon arc lights, ultraviolet sources, welding, and so forth.

b. Design. Similar to decal for hearing protection (see para 9–18).

c. Wording and pictures. Signs may be CAUTION or DANGER, depending upon the risk. Use words and pictures appropriate to vision protection.

9–20. Mishap prevention tags and barricade tapes

a. Use tags and barricade tape as a means to prevent injury or illness to personnel who are exposed to hazardous or potentially hazardous conditions, equipment, or operations that are out of the ordinary, unexpected, or not readily apparent. Tags and barricade tape should be used until the identified hazard is

eliminated or the hazardous operation is completed. Tags and tape need not be used where signs, guarding, or other positive means of protection are being used.

b. All required tags and barricade tape should meet the following criteria:

(1) Tags and barricade tape should contain a signal word panel and a major message.

(a) The major message should indicate the specific hazardous condition, the instruction to be communicated, or both.

(b) The signal word should be readable at a minimum distance of 5 feet (1.52 meters) or such greater distance as warranted by the hazard.

(c) The tag's major message should be presented in either pictographs, written text, or both.

(d) The signal word and the major message should be concise and understandable to all personnel who may be exposed to the identified hazard. The message may be supplemented or substituted by safety symbols in the safety symbol panel.

(e) All personnel should be informed as to the meaning of the various tags used throughout the workplace and what special precautions are necessary.

(f) Tags should be affixed as close as safely possible to their respective hazards by a positive means, such as string, wire, or adhesive that prevents their loss or unintentional removal.

(2) The signal word should be DANGER, CAUTION, NOTICE, SAFETY INSTRUCTIONS, or similar words. Figure 9–6 provides examples of safety tags.

(a) Danger tags should be used in major hazard situations where an immediate hazard presents a threat of death or serious injury to personnel. Danger tags should be used only in these situations.

(b) Caution tags should be used in minor hazard situations where a nonimmediate or potential hazard or unsafe practice presents a lesser threat of personnel injury. Caution tags should be used only in these situations.

(c) Warning tags may be used to represent a hazard level between caution and danger instead of the required caution tag, provided that they have a signal word of WARNING and appropriate major message.

c. A single tag or length of tape should address one topic only. The signal word panel should be reproduced on both sides of the tag. A translated signal word panel may be used on the second side of bilingual tag. Either the message panel or general support information may be printed on the back of the tag. Examples of general support information are: "Do not remove–see reverse," "Contact supervisor before removing," or "See other side."

d. The message panel for tags should be white for high contrast and for good legibility of information. Lettering should be black. Other high contrast color pairs may be used for symbolic representations.

e. The message panel may be surrounded by a tag border panel. The tag border should offer a contrast to the background color of the message panel and use the same colors shown on the tag signal word panel. If necessary to achieve better contrast, the border may be white.

f. Barricade tapes should be placed to alert and inform the viewer in sufficient time to take appropriate evasive actions to avoid the hazard.

g. Barricade tapes should be placed so they are legible, nondistracting, and so that their placement does not create another hazardous condition.

h. Safety tags should be affixed by positive means such as nylon tie wrap, string, wire, adhesive, or other connecting means that reduce the likelihood of loss or unintentional removal. Lockout tag should be attached by a one-piece, all environmental tolerant nylon cable tie.

i. Safety tags should include a provision for identifying and contacting the person authorizing or applying the tag.

j. The safety tag or barricade tape should be capable of withstanding the environment to which it is exposed for the maximum period of time that the temporary hazard is expected to exist.

Figure 9–6. Examples of safety tags (this graphic should be seen in color for complete clarity)

Section III

Standards for Safety Markings

9–21. Use of color markings

All color markings should comply with federal standards and Army regulations.

9–22. Use of paint

Paint color numbers for markings and signs should comply with SAE AMS–STD-595as listed in table 9–5. Use high visibility (fluorescent) paint in the appropriate, similar color when instant recognition is essential. Use luminous (phosphorescent) paint to mark the location of exits or emergency equipment in low-light areas. Materials other than paint, such as decals and tapes in similar colors, may be used for hazard markings and identification. Color coding should not be relied on as the sole means for identification of hazards. When areas require particular emphasis, labels and pictorials should be considered.

Table 9–5
Paint color numbers from SAE AMS–STD–595

Color[1,2,3]	Gloss	Semi-gloss	Lusterless

Table 9–5
Paint color numbers from SAE AMS–STD–595—Continued

Red	11105	21105	31136
Orange	12246	22246	32246
Yellow	13655	23655	33538
Green	14260	24260	Not applicable
Blue	15102	25102	Not applicable
Magenta	17142	27142	37142
White	17875	27875	37875
Black	17038	27038	37038

Notes:

[1] Red No. 21136 may be used instead of 21105.

[2] Yellow No. 23538 may be used instead of 23655.

[3] Retro-reflective colors will conform to those colors specified in FP–03.

9–23. Red markings

a. Fire equipment and systems. Use red as the basic color for identifying fire detection equipment and fire suppression systems. These include:

(1) Fire alarm boxes (pull boxes).

(2) Fire blanket boxes.

(3) Fire extinguisher containers, except for stored pressure water extinguishers.

(4) Fire extinguishers for large areas; when the extinguisher is not readily visible to area occupants, use red on the housing wall or support above the extinguisher to show its location.

(5) Fire hose location.

(6) Fire pumps.

(7) Fire sirens, except vehicular-mounted.

(8) Sprinkler piping (see MIL–STD–101C).

(9) Fire buckets.

(10) Fire-reporting telephones.

(11) Emergency exit signs. An exception consistent with the requirements contained in NFPA 101 may be made to comply with local requirements.

b. Containers of flammable liquids. Safety cans or other portable, service-type containers of flammable liquids having a flashpoint at or below 80 degrees Fahrenheit and table containers of flammable liquids (open-cup tester), excluding shipping containers, should be painted red. In addition, either such containers should have some additional, clearly visible identification in the form of a yellow band around the can or the name of the contents conspicuously stenciled or painted on the can in yellow. Containers should be properly labeled with appropriate warnings and contents identified as required by 29 CFR 1910.1200.

c. Danger. Use red as the basic color for identifying:

(1) Danger signs.

(2) Stop buttons or electrical switches used for emergency stopping of machinery.

(3) Emergency stop bars on hazardous machines.

9–24. Yellow markings

a. Use yellow as the basic color for:

(1) Designating caution.

(2) Marking dangerous chemicals and physical hazards that one could strike against, stumble over, or get caught between.

b. Solid yellow, yellow and black stripes, or yellow and black checks in optional dimensions may be used interchangeably. Use the pattern that attracts the most attention in the particular environment.

c. The following are examples of where to use yellow markings for caution:

(1) Industrial areas where particular caution is needed, such as the bottom edge of overhead doors or top and bottom treads and risers of stairways.
(2) Fire hydrant barrels (refer to NFPA 291 for additional color coding options for different firefighting hydrant pressure systems).
(3) Caution signs.
(4) Piping systems containing flammable material (see MIL–STD–101C).
(5) Waste containers for combustible materials (list contents using black lettering).
(6) A hazardous floor area.

d. The following are examples of required yellow markings for physical hazards:
(1) Lower pulley blocks and cranes that invade personnel areas.
(2) Coverings and guide wires, sides of freight car loading plates, or runways (put stripes on sides of runways).
(3) Pillars, posts, or columns.
(4) Fixtures suspended from ceilings or walls that extend into normal operating areas and corner markers where material-handling equipment is used.
(5) Edges of horizontally closing elevator doors.
(6) Exposed edges of platforms, pits, and wells.
(7) Required static electricity grounding points (aircraft, communication, generators, petroleum, oil, lubricants, and so forth). On these points, a yellow circle 18 inches in diameter with a 2-inch black border should encircle each grounding rod permanently installed in a hard surface. The words “Static Ground Connection” or “Static Grounding Point,” and a numeric or alphanumeric identification of the rod should be stenciled in black on a yellow circle. These markings may be painted or decals. However, the material used should be environmentally tolerant and not subject to degradation by petroleum, oil, and lubricants product spillage. Markings of this type are not required for temporary ground rods.
(8) Exit passageways in hangars and warehouses.
(9) Any container containing flammable liquids should be conspicuously painted yellow and marked “Flammable–Keep Fire Away” in red lettering.
(10) Petroleum product containers used for shipping and storage and issued to table of organization and equipment units are excluded from this requirement.

9–25. Green markings

Use green markings as the basic color for designating safety equipment, including the location of first aid and first aid equipment (other than firefighting equipment and ambulance markings). The following are examples of where solid green, green and white stripes, green cross on white background, or white cross on green background should be used:

a. First aid equipment.
b. First aid dispensaries.
c. Stretchers.
d. Personnel deluge showers and eyewash sinks.
e. Protective masks.
f. Safety starting buttons, such as the inching button on dough mixers, metal planers, boring mills, and laundry equipment.
g. Safety instruction signs.
h. Safety bulletin boards.

9–26. Black, white, and yellow markings

Black, white, yellow, or combinations of black with white or yellow are the colors for designating traffic or housekeeping markings. The following are examples of where these markings should be used:

a. Traffic. Examples include:
(1) Location and width of aisles in nonhazardous areas.
(2) Dead end of aisles or passageways.
(3) Directional signs.

b. Housekeeping. Examples include:
(1) Location of refuse cans.
(2) Clear floor areas around first aid, firefighting, and other emergency equipment.

9–27. Blue markings

a. Blue is the color for identifying safety information on information signs and bulletin boards. Use blue for outside of switch boxes and electrical controls that are the starting point power source for potentially hazardous, electrical machinery, and equipment. This requirement does not apply to the following:

(1) Quarters.
(2) Barracks.
(3) Offices.
(4) Electrical outlets.
(5) Room lighting controls.
(6) Avionics vans.
(7) Other unmodified, factory-installed equipment where voltage, frequencies, and other characteristics are clearly labeled.

b. Blue has specific applications in railroading and is used to designate warnings against the starting, use, or movement of equipment that is under repair or being worked.

9–28. Orange markings

a. Use orange as the basic color to—

(1) Designate dangerous parts of machines or energize equipment where a potential hazard exists that could cut, crush, shock, or injure.

(2) Emphasize the hazards listed in paragraph 9–28*a*(1) when enclosure doors are open or when gear, belt, or other guards around moving equipment are opened or removed, exposing unguarded hazards.

b. Per AR 385–63/MCO 3570.1C, orange and white markers should be used to designate range limit markers.

Section IV

Specific Types of Army Signs

9–29. Street and highway markings

Colors of street and highway markings are designated in the American Association of State Highway and Transportation Officials, Manual on Uniform Traffic Control Devices (AASHTO–MUTCD). Highly visible (according to light conditions) materials in the correct colors may be used. Examples of materials are phosphorescent, fluorescent, and retro-reflective paints and tapes.

9–30. Markings for pipelines and compressed-gas cylinders

Color and identification schemes to designate the contents in piping systems and compressed-gas cylinders should conform to MIL–STD–101C, 29 CFR 1910.1200, and 29 CFR 1910.253.

9–31. Markings for power conductors

Color and identification of power conductors, grounding conductors, heating cables, and other power-controlled equipment should conform to NFPA 70.

9–32. Biological markings

See DA Pam 385–69 for Army biological symbol and marking requirements.

9–33. Ammunition and explosive markings

See DA Pam 385–64 for AE symbols and markings.

9–34. Range markings

See DA Pam 385–63 for specific range safety signage.

9–35. Chemical agent markings

See DA Pam 385–64 for chemical agent symbols and markings requirements.

9–36. Radiation markings

For ionizing radiation symbols and markings requirements, see chapter 10 of this pamphlet, AR 385–10, ANSI/HPS N2.1, and 29 CFR 1910.1096. Laser symbols and markings use ANSI Z136.1 and ANSI Z535 series with additional guidance in TB MED 524. Radiofrequency symbols and markings use IEEE C95.2 with additional guidance in TB MED 523.

Chapter 10
Radiation Safety

10–1. Introduction

The Army ionizing radiation program includes RAMs and ionizing radiation generating devices (RGDs); for example, an x-ray machine. The Army ionizing sources are governed by NRC RAM licenses or ARAs. The goal of the Army radiation program is to keep radiation exposure as low as reasonably achievable (ALARA) to Soldiers, civilians, contractors, the general public, and the environment in accordance with 10 CFR 20.1003 and 10 CFR 20.1101.

10–2. Radiation program key components

The essential components of an effective Army radiation program include inventories, training, surveys (including leak tests), and audits/inspections. The full program consists of management and control processes addressing all aspects of the following key components as applicable:

a. Radiation control measures.
b. NRC licenses.
c. ARAs.
d. Army reactor permits.
e. ARPs.
f. Army radiation safety recordkeeping, to include decommissioning records and liability estimates to support financial statement auditability.
g. Training.
h. Personnel monitoring, to include external dosimetry and bioassay.
i. Radiation safety life-cycle management.
j. Inventory and accountability.
k. Use and storage.
l. Internal and external program reviews.
m. Equipment calibration.
n. Survey instruments.
o. Radiation surveys.
p. Shipping, receiving, transferring, and transport.
q. Cargo and personnel security screening systems (PSSS).
r. Emergency response.
s. Installation support of tenants and contractors, as applicable.
t. Military operations support.
u. Foreign and captured material.
v. Range maintenance and disposal.
w. Decontamination survey guidance.
x. Handling and disposal of unwanted RAM.

10–3. Army radiation safety recordkeeping

a. NRC license conditions for retention of records should be met before considering ARIMS guidance.

b. AR 25–400–2 provides guidance for filing of radiation safety records and proper record disposition requirements.

c. The ARIMS/RSS–A contains the guidance on radiation safety files. Visit RSS–A at the following website address: https://train.arims.army.mil/rrsa/searchresults.aspx. Log in using your common access card (CAC). Use the search tab and type in the keyword section “radiation.” Radiation safety files are under 900A Emergency and Safety. There are two categories: 0–6 and 6 plus years for retention. Click “Search Crosswalk” on the left side of the web page. Then select the “900 Series: Emergency and

Safety." This provides AR 385–10 file numbers. Click on 900A Safety to open the 385–10 file numbers with their descriptions. A file structure example is 900A 385–10r1 "Ionizing radiation source accounting records." It is recommended that these files are kept 75 years. Contact the ARIMS representative at your organization for information about creating electronic RSP files.

d. Decommissioning records follow the guidance provided:

(1) Holders of NRC licenses should establish and maintain decommissioning records in accordance with 10 CFR 30.35(g), 10 CFR 40.36(f), and 10 CFR 70.25(g).

(2) Holders of ARAs establish and maintain decommissioning records similar to those that the NRC requires.

(3) Tenants holding NRC licenses and ARAs provide information about the location of, use, and storage of RAM to the garrison commander for the installation RAM history records (see AR 385–10).

e. Liabilities estimates will be developed to support financial statement auditability, including initial estimate development and annual revisions. These liability estimates include both active and deactivated reactors.

f. Radiation training records should be kept in accordance with AR 25–400–2.

10–4. Life-cycle management of radioactive commodities and radiation generating devices

a. The overarching goal of the life-cycle management program is to provide the Army the RAMs and RGDs to support the Army mission. To do this effectively, the RSO has to have accountability of the RAM at all times. Proper training and procedures should be in place to use RAMs efficiently, effectively, and safely. Training includes proper handling of RAMs, inventorying, surveying, leak testing with calibrated equipment for accurate results, and audits of the program. In addition, training should be conducted to ensure proper movement of materials, proper disposal procedures, and processes to ensure areas contaminated by radiation are properly decontaminated and decommissioned for future use.

b. Acquisition of material containing RAM is covered in AR 70–1 and DA Pam 70–3. The following are a few considerations for the acquisition community when considering the use of RAMs:

(1) Obtain approval from the applicable NRC license or ARA RSO before each procurement or re-procurement action to prevent violation of the limits and conditions of the applicable license or authorization.

(2) Coordinate matters pertaining to radioactive commodities with the appropriate NRC license or ARA RSO.

(3) Ensure that licensed or authorized material is only transferred to authorized persons or organizations as approved by the NRC license or ARA RSO.

(4) Separate national stock numbers (NSNs) that use RAM should be different from nonradioactive versions. Assure that the same NSN cannot apply to functionally identical or like radioactive items having different radioisotopes.

(5) Serial numbers should be used to identify each radioactive source.

(6) Propose not procuring radioactive items if nonradioactive items are available.

(7) Require life-cycle costs be covered (for example, disposal, leak/wipe testing, training, dummy device for training procurement, and inspections).

(8) Label RAMs in accordance with NRC guidance; the label consists of either the radiation symbol or the words "Caution–Radioactive Material," and includes the radioactive isotope, activity, and manufacture date.

(9) Plan for turn in, one for one replacement, cost versus benefit analysis, and a tracking system.

c. Acquire approval from the Army NRC license holder prior to acquisition of RAMs and RGDs.

d. The Army controls the distribution and accountability of RAMs and RGDs through the use of NRC licenses, ARAs, and ARPs. An ARA is used to control specific Army ionizing radiation sources that the NRC does not license. An ARP is used to control nonmilitary agencies bringing ionizing radiation sources onto Army lands. RAM should be controlled through either of these distribution and accountability mechanisms, unless the material is specifically listed as an exempt quantity (see 10 CFR 30.71, schedule B). If a radioactive source exceeds the exempt quantity amount, a license from the NRC should be obtained prior to receiving the material. These licenses normally take 6 to 12 months to obtain. Some systems require a sealed source and device registration that is required prior to even applying for an NRC license.

e. Material with smaller quantities may be exempt (see 10 CFR 30.71) or be licensed by the manufacturer as generally licensed (GL) material (see 10 CFR 31). GL items do not require additional NRC licensing, but do require the Army to comply with procedures established by the manufacturer. Transfers of GL items within the Army also require prior coordination with the manufacturer.

f. Regardless of the type of acquisition cycle or the point at which a radioactive item enters the acquisition process, an NRC license or an ARA has to be in place to support the acquisition activity except for exempt RAM. If a system enters the acquisition process, the system developer should work with the U.S. Army Test and Evaluation Command or U.S. Army Materiel Command (AMC) to ensure the item is supported. This needs to happen as soon as the material is identified as containing RAM or produces radiation. This is especially true for COTS items.

10–5. Guidance on radioactive materials and ionizing radiation generating devices inventory and accountability

Inventories of licensed or authorized ionizing radiation sources (RAMs and RGDs) should be made in accordance with the NRC license conditions or ARA conditions. The RSO for the command is responsible for the inventory. Inventories are provided to the installation RSO annually and to the radiation safety staff officer (RSSO) per command regulation.

a. The RSO should maintain a current inventory of all RAMs under NRC license(s), command ARA(s), and command controlled NRC GL materials.

(1) Under the direction of the RSO and based upon the command policy, RAMs and RGDs should be identified in the inventory process.

(2) RAM scheduled for disposal should be properly identified and labeled.

(3) The RSO should be aware of NRC license exempt materials that contain RAM in their command. The exempt material may affect background and area monitoring levels at the command.

(4) The RSO should provide an annual inventory with location to the installation RSO.

b. The inventory should be documented and maintained in accordance with the following:

(1) RAM inventory records should contain the following information, as applicable:

(a) The NSN, the manufacture and model number, and serial number of each sealed source and/or device, as applicable.

(b) A source identification number if there is no NSN or serial number.

(c) The radionuclide identity.

(d) The radionuclide chemical and physical form.

(e) The quantity of the source(s) on hand.

(f) The activity of the source in becquerel (Bq) (curie (Ci)); uranium should be specified in mass (kilograms (kg)).

(g) The activity determination date.

(h) The source and/or device location.

(i) The custodian's name (the person in possession of the source).

(j) The physical inventory date(s) (hands-on location date(s)).

(k) The name of the person(s) conducting the inventory.

(l) The date the RSO reviewed the inventory records and their name and signature.

(2) Source inventory records should account for all materials awaiting disposition (transfer and disposal).

(3) Source inventory records should be maintained in accordance with AR 25–400–2.

c. RGD inventory records under an ARA should contain the following information. Machine inventory records should be maintained in accordance with AR 25–400–2.

(1) The physical inventory dates(s) (hands-on location date(s)).

(2) The name of the person conducting the inventory.

(3) The manufacture, make, model, and serial number of each machine.

(4) The location of each machine.

(5) The custodian's name (the person in possession of the machine).

(6) The date the RSO reviewed the inventory records and their name and signature.

10–6. Use and storage of radioactive materials and devices

Use and storage of RAM must be in accordance with the NRC license, ARA, ARP, technical bulletin, and technical manual guidance.

a. Posting. NRC provides requirements on posting storage and work areas based on the amount of material and the dose rates emitted by the device. NRC license applications describe when and what posting is required. RAM signs are prohibited for RGD use. Hazard warning signs for RGD operations are prohibited for use to identify RAM storage locations.

b. Security. All radioactive sources are to be secured against unauthorized use or removal. Radioactive sources exceeding International Atomic Energy Agency Category 2 require additional security procedures as provided in chapter 11.

10–7. Internal and external radiation program reviews

Reviews are conducted periodically in compliance with NRC licenses or ARAs. As a minimum, an internal review is to be performed annually. An external review is recommended every 3 years.

10–8. Radiation surveys

a. Radiation surveys are performed to ensure dose rates and contamination levels are within regulatory limits and meet ALARA goals. Radiation surveys to ensure NRC license compliance are performed in accordance with procedures published by the NRC licensee. NRC NUREG 1556 also provides information on radiation surveys.

b. Radiation surveys routinely performed to ensure facilities and work surfaces are in compliance with AR 385–10 and NRC regulations are records retained for 5 years from the date of creation. Those surveys that indicate contamination will be kept for the life of the facility plus 75 years per AR 25–400–2.

c. Background measurements should be conducted at locations similar to those being surveyed. The background level is recorded in units of measurement to be used during the survey. The background is subtracted from the survey results to determine actual radiation dose rate or contamination level.

10–9. Survey instruments

a. An adequate number and type of radiation survey meters and monitoring devices should be available to support the RSP. The RSO should maintain at least two survey instruments of each type used to accommodate maintenance and calibration downtime.

b. Radiation survey instruments should be response checked with an appropriate check source before and after use. Fixed, walkthrough, portal, or step-in contamination monitors are response checked on a routine basis sufficient to ensure satisfactory operation and in accordance with the manufacturer's instructions. A log should be maintained to document these checks (see https://safety.army.mil/radiation).

10–10. Equipment calibration

a. Laboratory instruments require dedicated calibration and check sources. Quality control procedures should be in place to ensure that the equipment is functioning correctly and the calibration is traceable to the National Institute of Standards and Technology (NIST). Calibrating organizations should adhere to the requirements of ANSI N323 and AR 750–43.

b. Calibration sources are of a type and activity appropriate for the intended use of the instrument.

c. Calibrate radiation survey instruments used for health or safety purposes at least annually (or as specified in TB 43–180) using NIST traceable radiation sources (see TB 750–25).

10–11. Emergency response

a. The RSO supports radiation safety matters for the incident commander coordinating the emergency response effort.

b. The RSO provides radiation safety training to personnel from F&ES. Emergency response training should be conducted annually or when there is a significant change to the radiation safety emergency response plan.

10–12. Army conflicts and military deployments

a. During armed conflicts and other military deployments the military must balance risks from radiation with all other risks in support of achieving operational objectives.

b. The RSO; chemical, biological, radiological, and nuclear (CBRN) staff officer; and medical staff support radiation safety matters for the operational commander.

c. The RSO or CBRN staff officer provides radiation safety training to personnel. This training should be conducted annually, in preparation for deployment, or when there is a significant change to radiation exposure of personnel.

d. The RSO, CBRN staff officer, and medical staff advise commanders concerning radiation risks and selection of appropriate selection of operational exposure guidance (OEG) in accordance with JP 3–11 and referencing NATO ATP 3.8.1, Volume 1/STANAG 2521.

Chapter 11
Enhanced Security Procedures for Radionuclides of Concern

11–1. Introduction
This chapter provides guidance for establishing procedures and minimum physical security standards for the safeguarding, security, and storage of radionuclides of concern and applies to all NRC license holders and RSOs who possess a quantity of RAM at or above the Category 2 threshold limit per 10 CFR 37; additional guidance is provided in NUREG 2155. For outside the continental United States (OCONUS) sites, ensure the HN status of forces agreement (SOFA) is used in addition to the U.S. guidance.

11–2. Radioactive source categories
a. The aggregate activity of multiple, collocated sources of the same radionuclide should be included to determine if the total activity exceeds the Category 2 limit.

b. RAMs are to be considered aggregated or collocated if breaching a common physical security barrier (for example, a locked door at the entrance to a storage room) would allow access to the RAM or devices containing the RAM.

c. If multiple sources of the same radionuclide and multiple radionuclides are aggregated at a location, the sum of the ratios of the total activity of each of the radionuclides should be determined to verify whether the activity at the location is less than the Category 2 threshold of table 11–1, as appropriate. If the calculated sum of the ratios, using the equation in figure 11–1, is greater than or equal to 1.0, then the applicable requirements of this part apply. First, determine the total activity for each radionuclide from table 11–1. This is done by adding the activity of each source, material in any device, and any loose or bulk material that contains the radionuclide. Then use the equation in figure 11–1 to calculate the sum of the ratios by inserting the total activity of the applicable radionuclides from table 11–1 in the numerator of the equation and the corresponding threshold activity from table 11–1 in the denominator of the equation. Calculations should be performed in metric values (that is, TBq) and the numerator and denominator values should be in the same units.

Table 11–1
Radionuclides of concern

	Category 1		Category 2	
	Terabecquerels (TBq)	**Curies (Ci)**	**Terabecquerels (TBq)**	**Curies (Ci)**
Americium-241	60	1,600	0.6	16
Americium-241/Be	60	1,600	0.6	16
Californium-252	20	540	0.2	5.4
Curium-244	50	1,400	0.5	14
Cobalt-60	30	810	0.3	8.1
Cesuim-137	100	2,700	1.0	27
Gadolinium-153	1,000	27,000	10.0	270
Iridium-192	80	2,200	0.8	22
Plutonium-238	60	1,600	0.6	16
Plutonium-239/Be	60	1,600	0.6	16
Promethium-147	40,000	1,100,000	400	11,000
Radium-226	40	1,100	0.4	11
Selenium-75	200	5,400	2.0	54
Strontium-90/(Y–90)	1,000	27,000	10.0	270

Table 11–1
Radionuclides of concern—Continued

Thulium-170	20,000	540,000	200	5,400
Ytterbium-169	300	8,100	3.0	81

$$\sum_{i=1}^{n} \frac{R_i}{AR_i} = \frac{R_1}{AR_1} + \frac{R_2}{AR_2} + \cdots + \frac{R_n}{AR_n} \geq 1.0$$

(1) R_i = total activity for radionuclide i
(2) R_1 = total activity for radionuclide 1
(3) R_2 = total activity for radionuclide 2
(4) R_n = total activity for radionuclide n
(5) AR_i = activity threshold for radionuclide i
(6) AR_1 = activity threshold for radionuclide 1
(7) AR_2 = activity threshold for radionuclide 2
(8) AR_n = activity threshold for radionuclide n

Figure 11–1. Unity rule for Category 2 sources

d. Activation products contained in the structure (such as the stainless steel lining of a reactor vessel, stainless steel bolts, or the reactor hull) would not be subject to 10 CFR 37 as long as these materials remain an integral component of a reactor. However, upon decommissioning of the reactor, waste generated from decommissioning may be subject to 10 CFR 37 if the waste meets or exceeds a Category 2 threshold. For example, shipments of decommissioned reactor components would be subject to 10 CFR 37 Subpart D if their total activity met or exceeded a Category 2 threshold and if they weigh less than 2,000 kg (4,409 pounds) (see 10 CFR 37.11(c)).

e. Radionuclides of concern require protective measures:

(1) If any single source is larger than the Category 2 level listed in table 11–1.

(2) For multiple aggregated sources of the same radionuclide when the combined quantity exceeds the Category 2 level listed in table 11–1.

(3) For combinations of radionuclides, including multiple aggregated sources of different radionuclides when the aggregate quantities satisfy the unity rule of figure 11–1.

11–3. Unescorted access authorization

a. The Army NRC licensee should establish, implement, and maintain an unescorted access authorization program per 10 CFR 37 Subpart B and this chapter for individuals who have unescorted access to radionuclides of concern.

b. The Army NRC licensee designates the Army NRC license RSO, Army NRC license alternate RSO, certifying official for the personal reliability program, or local chairman of the Radiation Safety Council as the reviewing official for the unescorted access authorization program. The designation is by command appointment orders. The licensee confirms the reviewing official's trustworthiness and reliability based on a valid security investigation adjudicated to national security standards with eligibility for a security clearance. The reviewing official makes the determination on which individuals are permitted unescorted access to radionuclides of concern.

c. The reviewing official—

(1) Ensures the subject individual has informed and provided a signed consent to the security review per 10 CFR 37.23(c) before the reviewing official begins any background investigation. The denial or withdrawal of consent by an individual is sufficient cause for the reviewing official to deny or terminate unescorted access authorization.

(2) Ensures the protection of personnel information per 10 CFR 37.31 and AR 25–22.

(3) Reviews the subject individual's investigation file and dossier and the subject individual's personnel file. If the individual is in the personal reliability program the review can be coordinated with the certifying official. The review addresses the individual's:

(a) Criminal history records check.

(b) Employment history.

(c) Education.

(d) Personnel references.

(4) Evaluates the information and makes a determination on the trustworthiness and reliability of the individual to be allowed or denied unescorted access to radionuclides of concern. Use NRC guidance such as the relevance factors in NUREG 2155 in evaluating the information.

(5) Notifies the individual in writing of his or her right to complete, correct, or explain any adverse information. The licensee should maintain the confirmation of receipt by the individual of this notification for 1 year from the date of the notification (see 10 CFR 37.23(g) for the procedures if the individual believes the criminal history record is inaccurate or incomplete).

(6) Documents all significant actions when allowing or denying unescorted access. If the individual is denied unescorted access, inform the individual of the grounds for the denial and allow the individual an opportunity to provide additional relevant information.

(7) Ensures individuals authorized unescorted access to radionuclides of concern have a reinvestigation per 10 CFR 37.25(c) within 10 years of the date when unescorted access was granted. Follow the procedures in paragraphs 11–3*c*(1) to 11–3*c*(4) to determine whether the individual's unescorted access authorization is maintained or terminated.

(8) Maintains a roster of individuals with unescorted access authorization.

(a) This roster is signed by the reviewing official and countersigned by the licensee's command security manager. The roster should include the date and type of background investigation completed, and the date when the unescorted access authorization was approved or was last maintained based on a reinvestigation.

(b) The roster is updated when an individual has been newly authorized unescorted access or when an individual's access authorization is maintained based on a reinvestigation. The roster is updated promptly (but no later than 7 working days) by removing individuals whose unescorted access authorization has been terminated or who no longer require unescorted access.

(9) Obtains documentation of unescorted access authorization for contractor source maintenance personnel.

(a) When source maintenance personnel who require unescorted access are contracted, the maintenance company should provide to the reviewing official written documentation which includes the name of the personnel providing the service and a statement that the personnel have been deemed trustworthy and reliable in accordance with 10 CFR 37.29(a)(13).

(b) Unescorted access is only authorized with written documentation and phone confirmation by the reviewing official with the company providing the service and with the contracting officer's representative (COR) of the contract.

d. The Army NRC licensee—

(1) Conducts an annual review of the unescorted access authorization program for content and implementation per 10 CFR 37.33.

(2) Maintains documentation of the unescorted access authorization program per 10 CFR 37.23(h) and 10 CFR 37.33.

11–4. Security of radionuclides of concern

a. The security intent and objective is to reduce the risk of malevolent use of radionuclides of concern. Security measures cannot prevent 100 percent of all attempts at theft, sabotage, or diversion; however, in total, the measures provide multiple layers of security, or a "security in depth," that are designed to provide enhanced security and mitigate potential consequences.

(1) The Army NRC licensee should develop a written physical security plan to establish the licensee's overall security strategy. The plan should be developed per 10 CFR 37.43(a).

(2) The Army NRC licensee should develop and maintain written procedures that document how the requirements of this chapter, the security plan, and 10 CFR 37 should be met. The procedures should be developed per 10 CFR 37.43(b).

(3) Security personnel should assist the reviewing official in developing all the enhanced security requirements outlined in paragraph 11–3.

b. Facilities, vaults, and containers used for storage of radionuclides of concern are designated a mission essential and vulnerable area and a restricted area in accordance with AR 190–13. Such facilities, vaults, and containers are not to be used for storage of classified material. A vulnerability assessment and risk analysis should be conducted of the area not less than every 3 years in accordance with AR 190–51 and DA Pam 190–51.

c. Access control measures are implemented to ensure that only those authorized individuals have unescorted access to radionuclides of concern. Access control can be achieved by implementing one or more of the following measures:

(1) Limiting distribution of keys, keycards, access codes, or combination to doors and gates to individuals with unescorted access authorization.

(2) Remote activation of locked doors and gates using remote surveillance.

(3) Using a card reader and electronic locking devices at entry control points.

(4) Constant surveillance by an individual with unescorted access authorization.

Note. Keys and locks are controlled in accordance with AR 190–51 and the DoD Key and Lock Program.

d. Constant monitoring is performed to facilitate the immediate detection, assessment, and response to an incident involving a radionuclide of concern. Monitoring may be accomplished by any of the following examples:

(1) A monitored intrusion detection system with the capability to detect unauthorized entry and is linked to an on- or off-site central monitoring facility. Requirements for the intrusion detection system are specified in AR 190–13.

(2) An electronic device for intrusion detection (alarms that alert nearby facility personnel).

(3) Twenty-four-hour surveillance (video surveillance cameras and visual inspection by trained personnel).

e. Procedures are established for assessing and responding to unauthorized entry or entry attempts so that prompt mitigating measures can be taken.

(1) Assessment is accomplished annually by trained personnel who can initiate the appropriate response actions. The procedures should address the possibility of simultaneous alarms at multiple locations. The Army NRC licensee should have a prearranged plan with the local law enforcement agency (LLEA) for assistance.

(2) In the event of an actual or attempted theft, sabotage, or diversion of radionuclides of concern, the Army NRC licensee ensures LLEA is notified immediately, followed soon thereafter by a call to the NRC Operations Center at (301) 816–5100, the appropriate Army NRC license RSO, appropriate RSSO, and the ODASAF at (703) 697–1321. Telephone calls to notify the NRC and appropriate Army NRC license RSO should be as prompt as possible, but not at the expense of causing delay or interfering with LLEA response to the event.

f. A Category 2 serious incident report should be submitted per AR 190–45 for theft, loss, or recovery of radionuclides of concern or mismanagement of inventory records or assets. Reporting of theft, loss, or recovery to the Army NRC license RSO should be per AR 385–10, 10 CFR 20.802, and 10 CFR 37.57.

g. The Army NRC licensee should have a documented training program for personnel on implementation of these measures. The training addresses the access control system employed and notification procedures in the event of unauthorized access and potential malevolent activities. The training should also include the process for reporting any suspicious activities to security and management. The training and refresher training should be in accordance with 10 CFR 37.43(c).

h. The Army NRC licensee ensures that a security program review is conducted annually for content and implementation.

i. Refer to 10 CFR 37 Subpart D for specific requirements for transportation of radionuclides of concern, including advance notifications required for Category 1 RAMs.

Chapter 12
Decommissioning of Facilities and Areas

12–1. Introduction

a. Each facility that contained unsealed RAMs or was contaminated by RAMs is to be decommissioned prior to release.

b. If the RAM was NRC-licensed, the facility should be decommissioned in accordance with NRC guidance in NUREG 1757 and NUREG 1575.

c. This chapter applies to facilities that contained AMC NRC-licensed radioactive commodities and for areas that qualify for the simplified guidance in NUREG 1575.

12–2. Classification for decommissioning purposes

Army radioactive commodities do not cause contamination during normal use. Therefore, unless contamination is known to exist or is found during surveys, consider facilities that contained only radioactive commodities (and no other RAM) to be Group 1 sites as described in NUREG 1757.

12–3. Procedures

a. Surveys of radioactive commodity facilities that leave Army control are “routine release surveys” per guidance in paragraph 12–4. Surveys of radioactive commodity facilities that remain under the control of the Army are routine release surveys per guidance in paragraph 12–5.

b. Otherwise (for example, base realignment and closure sites, formerly used defense sites, and foreign sites), surveys are “final status surveys” following the guidance in NUREG 1757 and NUREG 1575 with limitations and conditions as specified.

c. In cases where contamination of a facility involves a sealed-source radioactive commodity, the alternative simplified survey procedures are used (see NUREG 1757, Volume 2).

12–4. Typical process for areas that leave Army control

a. Radiation safety expertise. The closing site solicits radiation safety expertise from the applicable licensee to conduct surveys following this paragraph. If contamination is expected, contact the AMC RSSO who should work with the NRC commodity license RSOs identified in AR 385–10 to provide further direction because the effort requires experienced decommissioning personnel and is beyond the scope of this pamphlet. However, when no radioactive contamination is expected, the areas are classified as Class 3 and a Level 1, 2, or 3 RSO may be able to perform the final surveys using this guidance and assistance from the RSSO and the radioactive commodity licensees identified in AR 385–10. Steps typically include:

(1) Performing and documenting an historical site assessment (HSA) with approval from the applicable NRC commodity license RSO(s).

(2) Formulating survey plans approved by applicable AMC NRC commodity license RSO(s).

(3) Determining NRC’s default derived concentration guideline levels (DCGLs) for release of the site for the applicable radioisotopes of concern.

(4) Coordinating survey plans and release limits with the stakeholders.

(5) In the case of OCONUS sites, coordinating survey plans and release limits with the HN.

(6) Performing and documenting final surveys.

(7) Filing the HSA and survey results at the unit, installation public works directorates, NRC commodity licensee RSO, AMC RSSO, Army RSO, and U.S. Army Public Health Command (APHC).

(8) Funding for wipe test analysis as required by the appointed licensed Army laboratory.

b. Area classification. An HSA is conducted to identify areas where NRC-licensed or radium-containing commodities were stored (long term), repaired, cannibalized, or buried. A review of the type of operation, as well as any history of mishaps, incidents, and leak tests, is used to classify areas. Any routine surveys, as well as any release surveys previously conducted in the area, are also considered for inclusion in the HSA. Commodity areas are classified as follows:

(1) *Nonimpacted.* The following storage areas do not require any surveys. It is necessary to document the areas considered and to justify why no surveys were performed. An example is static storage of sealed sources.

(a) Short-term temporary storage areas.

(b) Where individual item activity did not require posting as a RAM area per 10 CFR 20.1902(e), which requires posting when radionuclide activity is 10 times the quantity of such material specified in appendix C to 10 CFR 20.

(c) Where GL smoke detectors, exit signs, and exempt license devices such as advanced combat optical gun sites were stored.

(d) Where a specific NRC-licensed condition relieved the RAM posting requirement for bulk storage (for example, less than 1,000 tritium compasses).

(e) Where armored vehicles with intact DU shielding were present.

(f) Where sealed NRC-licensed commodities and GL items were present and leak testing indicated no sealed source leakage. This would include temporary repair and fielding missions.

(2) *Class 3.* Most radioactive commodity areas that cannot be classified "nonimpacted" should be classified as Class 3. Where historical information indicates a release occurred but has already been cleaned to present day levels for unrestricted release per NRC Regulatory Guide 1.86, the area can also be classified as Class 3.

(3) *Class 1 and Class 2.* These classifications are for areas where there is known contamination. This would most likely occur in commodity repair and maintenance areas, radioactive waste storage areas, and cannibalization and demilitarization facilities. It might also occur where a commodity was known to have been broken and leaked, and in areas where a release occurred in the past that has not been decontaminated to releasable limits. As stated in paragraph 12–4*a*, when radioactive contamination is expected (Class 1 and Class 2), experienced decommissioning personnel are required and a rigorous application of NUREG 1575 beyond the scope of this pamphlet is required. Contact the AMC NRC commodity license RSOs in AR 385–10 for further direction.

c. Final surveys.

(1) *Random sampling of building surfaces.* Building surfaces of concern are the floor and walls to a height of 2 meters above the floor. For Class 3 areas, random sampling is used to eliminate the need for gridding and moving furniture. Thirty random locations can be used to cover each survey unit as permitted by NUREG 1575 and NUREG 1757. A survey unit is an area or group of areas (indoor units not exceeding 2,000 square meters) with a similar history and the same contamination potential. If all 30 locations measure below the release limit of NRC Regulatory Guide 1.86, the Multi-Agency Radiation Survey and Site Inspection Manual (MARSSIM) statistical tests are not required to demonstrate compliance. An alternate sampling method, "simplified survey procedures," may be used in accordance with NUREG 1757, Volume 2 for nonleaking sealed sources which allows one area 100 centimeter $(cm)^2$ wipe per 300 $feet^2$ in a survey unit. This method is acceptable but should be approved by the applicable AMC NRC commodity license RSO. This survey method significantly reduces the time and cost for the final status survey.

(2) *Wipe testing of building surfaces.* Contact the AMC NRC commodity license RSO identified in AR 385–10 to provide guidance on wipe test instructions and how to obtain wipe test supplies. If tritium-containing commodities were present, special tritium wipes are required. NUREG 1757, Volume 2 "simplified survey procedures" apply. Funding for the wipe test supplies, labor, and laboratory counting should be the responsibility of the command performing the decommissioning effort.

(3) *Static measurements on building surfaces.* Contact the AMC NRC license RSO identified in AR 385–10 for guidance selecting an appropriate instrument and counting mode (count rate versus integrated count). The level detected at each random location is compared to the level in a "background area"; for example, an area of similar construction with no RAM or radioactive commodity history. The results are recorded. If any levels noticeably exceeding background are detected, immediately notify the AMC NRC license RSO in AR 385–10.

(4) *Scanning.* One hundred percent of all surfaces in the facility are scanned with a thin window pancake-type probe or alpha/beta scintillation probe held within 1 centimeter of the surface in accordance with NUREG 1757, Volume 2 simplified survey procedures. The alpha emitting and gamma emitting radioactive commodities are subject to periodic leak testing. In the absence of a history of alpha or gamma source leakage, scanning for alpha or gamma radiation is not required. Most of the radioactive commodities that are not periodically leak tested use low energy beta emitters. Scanning for a low energy beta emitter is not feasible. Scanning should therefore not be required for hydrogen 3 (H–3 tritium), promethium 147 (Pm-147), or nickel 63 (Ni-63) commodities. In the absence of expected or known DU contamination, scanning for DU is not considered feasible. However, if contamination is known or expected to

exist in an area, the area should be classified as Class 1 or Class 2 and scanning should be performed as part of a more extensive effort beyond the scope of this pamphlet.

(5) *Furniture and equipment.* If the furniture and equipment are still present in an area, they should also be surveyed. The furniture and equipment in a survey unit should be covered with 30 sample locations. Since it is difficult to identify random locations on furniture and equipment with odd shapes, the use of biased sampling is recommended; for example, locations most likely to be contaminated. This would include the surfaces of tables, shelves, drawers, and other areas that were in direct contact with the commodities. As with the building surfaces, wipe tests and static measurements should be made for each location and documented. NUREG 1757, Volume 2 simplified survey procedures should apply.

(6) *Drains, vents, and ducts.* Wipe testing and static measurements of drains, vents, and ducts is not required for Class 3 areas.

(7) *Characterization surveys.* Characterization surveys are not required in Class 3 areas.

(8) *Verification surveys.* Verification surveys are not required in Class 3 areas.

d. Instrumentation. Instruments and methods chosen should be capable of detecting 25 percent of the DCGL for the release of buildings and 50 percent of the DCGL for the release of grounds.

e. Reporting. Each Level 1, 2, or 3 and installation RSO notifies the command RSSO when a building or area that currently or formerly contained licensed materiel or AMC radioactive commodities is scheduled for demolition or should no longer contain AMC radioactive commodities. The command RSSO then notifies the NRC license RSO to ensure survey efforts fulfill the requirements of this guidance and to ensure the NRC is notified as appropriate.

(1) Unless a facility is specifically listed on an NRC license for Class 3 commodity areas (no history of contamination), the NRC does not need to be notified of impending shutdown or change in operational status. The NRC also does not need to be informed that surveys are to be conducted in Class 3 commodity areas, or of the results of the survey, unless contamination is found. Records of the HSA and any surveys performed in a Class 3 commodity area should be filed at the unit, installation, AMC RSSO, and AMC NRC commodity license RSO offices. This information may be required at a later date to demonstrate to the NRC that the area was properly released.

(2) NRC has advised that notification of the NRC is required when facilities listed in the license contain areas that are expected to be, or are, contaminated (Class 1 or Class 2). In this event, within 60 days of a decision to permanently cease commodity activities in such an area, or if no commodity activities have been conducted in such an area for a period of 24 months, the licensee should notify the NRC that the decommissioning process has begun, or within 1 year submit a decommissioning plan (see 10 CFR 30.36 for further information). To support these efforts, the RSO provides the AMC NRC commodity license RSO with the history of past commodity uses, contamination events, commodity inventories, and routine survey records for the areas to be released. It is the responsibility of the AMC NRC license RSO to notify the NRC of decommissioning.

12–5. Typical process for areas that should not leave Army control

Routine release surveys should be required so the area can return to unrestricted use.

a. Coordinate with regulators. Coordination with regulators is not required unless required by paragraph 12–5*e*.

b. Area classification. The radioactive commodity area should remain classified as “restricted” until routine release survey results demonstrate compliance with “unrestricted area” contamination levels as defined in AR 385–10, NRC regulatory guidance, or the conditions of the AMC NRC commodity license.

c. Routine release surveys. Formal conduct of the MARSSIM process, to include the HSA, area classification, derivation of DCGLs, and final surveys are not required. The formal process may be required at a later date when transfer of the area from Army control is planned. However, for a routine release survey, the selection of 30 random measurement locations per survey unit for building surfaces and 30 locations for the furniture and equipment in each survey unit is recommended. NUREG 1757, Volume 2 simplified survey procedures should apply.

d. Instrumentation. As a matter of standard practice, instruments and methods chosen for the routine release surveys should be capable of discerning the release limit in the presence of background radiation.

e. Reporting. Each Level 1, 2, or 3 and installation RSO notifies the command RSSO when a building or area that currently or formerly contained licensed materiel or AMC radioactive commodities is scheduled for demolition or should no longer contain radioactive commodities. The command RSSO then notifies the NRC license RSO to ensure survey efforts fulfill the requirements of this guidance, and to ensure

the NRC is notified as appropriate. For Class 3 commodity areas (no history of contamination), the NRC does not need to be notified of impending shutdown or change in operational status. The NRC also does not need to be informed that surveys should be conducted in Class 3 commodity areas or of the results of the survey unless contamination is found. NRC has advised that notification of the NRC is required when areas are expected to be, or are, contaminated (Class 1 or Class 2). In this event, within 60 days of a decision to permanently cease commodity activities in such an area, or if no AMC commodity activities have been conducted in such an area for a period of 24 months, the AMC NRC commodity license RSO should notify the NRC that the decommissioning process has begun, or within 1 year submit a decommissioning plan. To support these efforts, the RSO should be required to provide the AMC NRC commodity license RSO(s) with the history of past commodity uses, commodities used, contamination events, commodity inventories, and routine survey records for the area to be released.

f. Recordkeeping. Each commodity-using Level 1, 2, or 3 RSO, as well as organization and installation RSOs, should maintain decommissioning records of radioactive commodity locations, leakage and contamination incidents, and routine survey results as required by AR 25–400–2.

Chapter 13
Dosimetry

13–1. Radiation dosimetry quantity equivalencies

Table 13–1 provides guidance in determining the equivalency of radiation dosimetry terms and concepts encountered outside 10 CFR. This pamphlet uses the terms and concepts of 10 CFR 20; however, situations arise outside of NRC purview where other dosimetry concepts and terms are needed.

Table 13–1
Radiation dosimetry quantity equivalencies

Commonly used dosimetry terms in AR 385–10 and DA Pam 385–10		
10 CFR 20	**ICRP Publication 26**	**ICRP Publication 60/ICRP Publication 103**
Committed dose equivalent (HT,50)	Committed dose equivalent (H50)	Committed equivalent dose (HT(50))
Committed effective dose equivalent (CEDE) (HE,50)	Stochastic effects limit ($T_T w_T H_T$) first defined as “committed effective dose equivalent” in ICRP Publication 42	Committed effective dose (E(50)) $E(50) = T_T w_T H_{T,50}$
Effective dose equivalent (EDEX) (Hd)	Deep dose equivalent (H10 mm)	Individual dose equivalent, penetrating (Hp(10 mm))
Lens dose equivalent (LDE)	LDE (H3 mm)	Individual dose equivalent, superficial (Hp(3 mm))
Shallow dose equivalent (SDE) (Hs)	Skin dose equivalent (H0.07mm)	Individual dose equivalent, superficial (Hp(0.07 mm))
Total effective dose equivalent (TEDE) TEDE = EDEX + CEDE	Sum of deep dose equivalent and CEDE	Effective dose (tissue-weighted sum of equivalent doses in all tissues and organs of the body)

Notes:
mm = millimeter.

13–2. Conditions for personnel requiring radiation monitoring

a. Overview. The Army dosimetry program is based on the concept of ALARA regarding exposure to radiation. ALARA involves making every reasonable effort to maintain exposures to radiation as far below applicable dose limits as is practically consistent with the purpose for which the activity is undertaken.

b. Radiation safety officers. RSOs possessing RAM and ionizing RGDs should assess exposures to radiation to demonstrate compliance with the occupational dose limits and to effectively support the ALARA concept for good RSP management.

c. External dosimetry. The RSO will issue dosimeters in accordance with AR 385–10 to assess ionizing radiation doses from external sources to the following:

(1) Personnel who are occupationally exposed to ionizing radiation in the course of normal job duties.

(2) Personnel who have a reasonable probability of receiving the following doses in any 1 calendar year:

(a) Adult occupationally exposed individuals. A dose in excess of 10 percent of the limits or any dose associated with entering high or very high radiation areas.

(b) Minors (less than 18 years of age). Minors should not receive a dose in excess of 10 percent of the annual limits.

(c) Declared pregnant women. Declared pregnant women should not receive a dose in excess of 10 percent of the exposure limits. Issue dosimeters to an occupationally exposed female when she declares her pregnancy in writing to the RSO. The installation or activity command, through the RSO, should provide monthly dosimetry throughout the duration of the pregnancy to determine the extent of compliance with declared pregnant women exposure limits. A fetal dosimeter should be used in addition to whole-body dosimeters. If their normal duties require the routine wearing of a lead apron, and they are provided with both a whole-body dosimeter to be worn under the apron and a head-and-neck dosimeter to be worn outside the apron at the neck area to monitor exposure to the head, neck, and the lens of the eye, then their fetal dosimeter should be worn under the apron at the abdomen. If they are normally issued a single whole-body dosimeter and choose to wear a lead apron, the whole-body dosimeter should be worn outside the lead apron, and the fetal dosimeter should be worn under the lead apron.

d. Tactical dosimetry. The unit will issue tactical dosimeters in accordance with AR 385–10 and command guidance to assess ionizing radiation doses from external sources during armed conflicts and military deployments with a potential for personnel exposure to ionizing radiation.

13–3. Types of radiation monitoring

a. External monitoring for exposure to beta, gamma, neutron, or x-ray radiation.

(1) *Whole-body monitor.* A whole-body dosimeter is used to monitor the external radiation dose from RAMs or RGDs. The whole body constitutes the head, trunk (including male gonads), arms above the elbow, or legs above the knee. From the whole-body monitor, the EDEX and SDE can be determined.

(2) *Head-and-neck monitor.* The dose from the head-and-neck dosimeter is used to determine the dose to the skin and lens of the eye, providing both an SDE and an LDE. If the eye protection of an occupationally exposed individual wearing eye protection (for example, leaded glasses) provides at least 700 mg/cm2 thickness, the RSO should annotate on the dosimetry issue listing beside the individual's name "eye protection provided," so that the 1000 mg/cm2 depth dose should be computed rather than the standard depth of 300 mg/cm2.

(3) *Wrist monitor.* A dosimeter that is worn on the wrist to determine the dose to the hands or wrists. The EDEX and SDE can be determined from the wrist dosimeter.

(4) *Ring monitor.* Ring dosimeters are worn on the third finger of the dominant hand to determine if the hands and fingers have been exposed. Ring dosimeters record the SDE.

(5) *Fetal monitor.* Fetal monitors are to be worn in addition to any previously provided personnel monitoring devices. The monitor should be worn over the developing fetus. See the online U.S. Army Dosimetry Center (USADC) Customer Handbook (CAC required) for additional information on fetal monitors.

(6) *Self-reading alarming electronic dosimeter.* Electronic dosimeters enhance radiation safety and are used in addition to USADC-provided dosimetry to provide a real-time dose estimate and determine if any radiation limit has been reached. Electronic dosimeters should not be used as an official dose of record; however, they are used to determine if emergency dosimetry processing is necessary. Recommended set point for self-reading alarming electronic dosimeters should be ALARA investigation Level 1 (see AR 385–10).

(7) *Tactical radiation dosimeters.* Tactical radiation dosimeters inform radiation safety and are used to monitor external gamma and neutron radiation doses to personnel. They are designed for use during military operations with a potential for personnel exposure to ionizing radiation during armed conflicts or military deployments where occupational dosimetry is not available or practical. These systems may include electronic dosimeters (for example, AN/UDR–13, AN/UDR–14, AN/UDR–15, IM–278/U) that provide a readout of radiation information to personnel in the field. Passive dosimeters measure total gamma plus neutron radiation exposure (for example DT–236, DT–236A) but must have the data analyzed by a radioactivity, detection, indication, and computation (RADIAC) reader (for example AN/PDR–75, AN/PDR–75A). Tactical radiation dosimeters are appropriate for personal dosimetry applications as described in JP 3–11 for OEG criteria, determination of unit radiation exposure status, medical diagnosis, and treatment for radiation injury.

b. Bioassay.

(1) *In-vitro grab specimen.* An internal grab specimen is used as an investigatory determination if a person is being exposed to radionuclides internally. A 24-hour specimen should be taken if the grab specimen indicated the presence of radionuclides. Routine bioassay specimens should use the grab specimen (for example, nasal swipes, urine, and fecal samples) to determine if personnel are being internally exposed to radionuclides.

(2) *In-vitro 24-hour specimen.* One urine or fecal specimen is taken over a 24-hour period to determine the CEDE.

(3) *In-vivo measurement.* Measurements are performed using detectors to determine radionuclides inside the body.

13–4. Area dosimeters

In some areas where RAMs or RGDs are used, individuals may be occupationally exposed to ionizing radiation but not meet the criteria of paragraph 13–2 and, consequently, not be provided individual dosimetry. In such areas, the RSO may provide temporary area dosimeters for a limited period of time to obtain a representative area dose to confirm that occupational doses to individuals are less than 10 percent of the applicable limits.

13–5. Dosimeter wearing procedures

a. Authority. All personnel will complete DD Form 1952 (Dosimeter Application and Record of Occupational Radiation Exposure) in accordance with AR 385–10 before receiving USADC dosimetry or participating in a routine bioassay program. (See para 13–8 for additional information on DD Form 1952.)

b. Form. DD Form 1952 will be completed per AR 385–10, whether a dosimeter was issued or not, if personnel are occupationally exposed, to include visitors and transients.

c. Conditions.

(1) To measure an occupationally exposed individual's dose, the issued dosimeter should be worn when there is a potential for radiation exposure. All occupationally exposed individuals issued dosimetry are required to wear their dosimeter(s) during occupational exposure while employed by the DA.

(2) In event of an emergency, firefighters, emergency responders (to include ARNG civil support teams, CBRN, and high yield explosives consequence management response force teams), and medical personnel who respond are required to use USADC-issued dosimetry to ensure a dose of record is recorded for the event.

(3) Occupationally exposed individuals issued a dosimeter should ensure correct use and handling. Misleading dose reports and unnecessary investigations may result from improper use.

(4) Malicious exposure of a dosimeter is forbidden. Dosimeter abuse is a misuse of government property. These acts may result in disciplinary action.

d. Wearing procedure for U.S. Army Dosimetry Center issued whole-body dosimeters.

(1) Occupationally exposed individuals should wear the whole-body dosimeter as follows:

(a) Below the shoulders.

(b) Above the hips.

(c) Outside the clothing.

(d) On the portion or area of the body nearest the radiation source.

(e) With the dosimeter window facing out from the body.

(2) Declared pregnant women should wear the fetal dosimeter at the abdomen over the developing fetus.

(3) Do not use an individual's whole-body dosimeter to measure localized exposures. See paragraph 13–5*e* for information on supplemental dosimeters.

(4) Do not attach tape or other substances to the front of the dosimeter beta window. However, a label with the user's name may be placed on the dosimetry hanger on the clear space at the front-top of the device hanger in accordance with procedures specified in the online USADC Customer Handbook (CAC required).

(5) Do not exceed the established wearing period indicated on the dosimeter issue listing. However, in an extenuating circumstance where replacement dosimeters have not yet arrived before the start of the next wearing period, the dosimeters in use can continue to be used until replacement dosimeters arrive. If an extended wearing period is required or occurs, ensure that the revised dates for the longer wearing period are provided on the corresponding dosimeter issue listing.

(6) Store dosimeters only in the RSO-approved storage location at the end of an activity or work day.

(7) Do not intentionally expose dosimeters.

(8) TDY travelers should ensure their dosimeters are with their carry-on baggage or on their person and request a hand inspection of their dosimeter. If the dosimeter is inadvertently exposed as checked or carry-on baggage, the traveler should inform his or her RSO. The additional exposure should be accounted for separately from the dose calculated for the individual's exposure. Typically, the dose to baggage from a checkpoint x-ray system is on the order of 0.01 milliSievert (mSv) (1 one-thousandth of one rem (mrem)); the dose to baggage from checked-bag systems range from 0.1 mSv to 2.5 mSv (10 to 250 mrem).

(9) TDY travelers in a group should consolidate their dosimeters and keep them with a control badge when stored and when not in use.

e. Wearing supplemental dosimeters.

(1) The RSO may provide an occupationally exposed individual additional dosimeters (for example, head-and-neck, wrist, and ring) to assess localized occupational dose per paragraph 13–3*a*. USADC should provide these dosimeters. Additional non-USADC-provided dosimeters may be used, but should not be considered substitutes for official USADC dosimeters. Non-USADC-provided supplemental dosimeters may include:

(a) Pocket ionization chambers.

(b) Self-reading pocket dosimeters with or without alarms.

(c) Other devices, which provide localized exposure or exposure, rate information.

(2) When an occupationally exposed individual wears a wrist or ring dosimeter, the wrist dosimeter should be worn on the wrist closest to the radiation source. The ring dosimeter should be worn on the third finger of the dominant hand, oriented towards the radiation source, and under any protective gloves.

f. Wear of tactical dosimeters.

(1) Soldiers will wear tactical dosimeters during armed conflicts or military deployments as required within the operational environment.

(2) Wear tactical wrist watch-style dosimeters (for example DT–236, DT–236A, IM–278/U) on the wrist or on the front load carrier (FLC) located on the mid to upper torso and on the outside of any worn equipment.

(3) Wear portable radiation detector-style RADIACs/dosimeters (for example AN/UDR–13, AN/UDR–14, AN/UDR–15) on the FLC located on the mid to upper torso and on the outside of any worn equipment.

g. Identification.

(1) Dosimeter holders should display some readily identifiable, temporary individual identification (for example, an individual's name) to ensure that occupationally exposed individuals wear their own dosimeter.

(2) Individuals issued dosimetry should not permanently inscribe the dosimeter holder with a name, number, or other identifying symbol and should not cover the dosimeter's beta window.

(3) Issued dosimeters are not to be used by personnel other than the designated individual during the wearing period. Immediate supervisors and the RSO should ensure that a designated individual issued a dosimeter is the only individual to use that dosimeter.

h. Army-issued dosimeters. Army-issued dosimeters should only be used for the purpose that they are issued. For example, Army-issued dosimeters are not to be worn during non-Army-related off-duty employment (see para 13–5*k)*.

i. Storage. The RSO should approve, in writing, all dosimeter storage locations. Each storage location should—

(1) Be close to the area in which the occupationally exposed individual works, yet outside of the areas where the radiation sources or devices are actually used or located.

(2) Be adequately shielded from ionizing radiation.

(3) Contain a control dosimeter.

(4) Provide a storage area for unattended dosimeters where access is restricted from unauthorized personnel.

j. Dosimetry service.

(1) DA installations or activities should use the Army dosimetry service provided by USADC.

(2) Government-owned contractor-operated (GOCO) facilities (for example, long-term contractors) should use the Army dosimetry service unless specifically exempted by contract.

(3) Local national personnel may use local national dosimeters and dosimetry services with the approval of the RSSO. The more restrictive of the HN and U.S. laws should apply.

(4) While the requirements of paragraphs 13–5*j*(1) through 13–5*j*(3) do not preclude the use of supplemental dosimeters as discussed in paragraph 13–5*e*, the use of supplemental dosimeters does not eliminate the use of official USADC-provided dosimeters.

(5) DA installations or activities should use the guidance and instructions provided in the online USADC Customer Handbook (CAC required) to administer their dosimetry program.

(6) For additional information contact Chief, U.S. Army Dosimetry Center (AMSAM–TMD–SD), Building 5417, Redstone Arsenal, AL 35898–5000, commercial phone (256) 876–1786.

(7) Tactical dosimeter data will be analyzed in the field and returned for maintenance and calibration as indicated in the technical manual of the specific system.

k. Personnel exposure from off-duty employment.

(1) Any military occupationally exposed individual who is performing off-duty employment that involves additional occupational exposure to ionizing radiation should provide copies of his or her occupational dose records to the RSO as a condition of the individual's authorization for off-duty employment. This ensures that the annual 50 mSv (5 rem) dose limit is not exceeded.

(2) Any civilian or nonmilitary individual whose duty involves occupational exposure to ionizing radiation and whose secondary employment involves additional occupational exposure should provide copies of his or her off-duty dose records to the RSO.

(3) Individuals should provide these off-duty dose records to the RSO:

(a) No later than 2 months after the individual from the off-duty employer receives such records.

(b) No later than 4 months following the termination of such off-duty employment if the conditions in paragraph 13–5*k*(3)(*a*) are not met.

(4) The RSO should forward the records of these doses to USADC for inclusion into the individual's lifetime dosimetry records.

(5) In reciprocation, the military RSO should also provide dosimetry results to the off-duty employer upon an employee-signed request.

l. Armed conflicts. The U.S. military may deploy globally in support of armed conflicts or prolonged military operations to remote locations. The nature of these operations may limit unit capabilities to transmit data or return equipment to a laboratory to be calibrated or read at regular intervals as required for an accredited occupational dosimetry program. Occupational dosimetry should be used in accordance with AR 385–10 and this pamphlet, when practical, for military operations with a potential for personnel exposure to ionizing radiation. Tactical dosimeters (for example DT–236, DT–236A, IM–278/U, AN/UDR–13, AN/UDR–14, or AN/UDR–15) should be used during military operations with a potential for personnel exposure to ionizing radiation during armed conflicts or military deployments where occupational dosimetry is not available or practical. For additional guidance, refer to JP 3–11.

(1) *Issuance.* Tactical dosimeters will be issued to the individual as required by the operational environment.

(2) *Training.* The unit RSO or CBRN staff officer should provide radiation training prior to issue of tactical dosimeters.

(3) *Recordkeeping.* Each unit will have a tactical dosimetry program down to the platoon level. Each program must track the following information:

(a) Roster of personnel issued tactical dosimeters.

(b) Tactical dosimeter serial number, date, and time of issue.

(c) Tactical dosimetry readings both before and after each issuance.

(d) Tactical dosimeter return date to U.S. Army Test Measurement and Diagnostic Equipment Activity or USADC for calibration (as appropriate).

(4) *Dose of record.*

(a) Each BDE maintains an account with USADC and coordinates shipment and dissemination of the tactical dosimeter official dose of record reports to Servicemembers. To create an account, the unit needs to contact the U.S. Army Dosimetry Center (AMSAM–TMD–SD), Building 5417, Redstone Arsenal, AL 35898–5000, commercial phone (256) 876–1786, or fax (256) 876–3816.

(b) Each BDE RSO (typically the CBRN staff officer) maintains copies of each Servicemember dose of record report from USADC for a period of at least 1 year after the Servicemember leaves the BDE and ensures that a copy of all records accompanies the Servicemember when assigned outside the BDE.

13–6. Processing dosimeters

The guidance in this chapter should be used for processing dosimeters to ensure dosimetry is completed accurately and in a timely manner.

a. Commanders of units with USADC accounts should ensure that batches of dosimeters are returned to USADC within 14 working days following the conclusion of the established wearing period.

b. Organizations with unique exchange out frequencies other than the standard monthly or quarterly period, based upon NRC or ARA requirements, should notify USADC to ensure the requirements are met.

c. The dosimeter processing time after the end of the wearing period is 14 working days.

d. Batches of dosimeters not received by USADC within 30 working days following the end of a wearing period should be considered overdue.

e. USADC should notify commanders, in writing, when their dosimeter accounts become overdue. USADC should furnish a copy of these notifications to the ODASAF.

f. USADC should notify appropriate licensees and ODASAF of overdue dosimeter accounts that involve their NRC-regulated commodities or materials.

g. USADC may require reimbursement for the cost of replacement of the dosimeters overdue by more than 60 working days.

h. If a dosimeter is lost, damaged, or the occupationally exposed individual's TEDE cannot be determined, the RSO should use one or any combination of the following methods to estimate a realistic administrative dose:

(1) Calculation of the affected occupationally exposed individual's dose based on occupancy or workload information and radiation exposure levels at the radiation source operator location.

(2) Estimation of the dose measured by a supplemental dosimeter if a primary dosimeter or official USADC-provided dosimeter is unavailable.

(3) Average of the affected occupationally exposed individual's previous occupational dose for the preceding 6 to 12 months.

Note. Use this method only if the exposure conditions for the period for which the dose is being estimated do not differ significantly from the conditions under which the previous known doses were sustained.

(4) Estimation from doses accrued by coworkers performing similar duties and having similar exposure opportunities.

i. If an administrative dose is assigned, the RSO should—

(1) Annotate on the local automated dosimetry report (ADR) that an administrative dose has been assigned.

(2) Indicate the administrative dose determination methods used on the ADR (see para 13–6*h*).

(3) Forward a report to Chief, U.S. Army Dosimetry Center (AMSAM–TMD–SD), Building 5417, Redstone Arsenal, AL 35898–5000. The report should contain the following:

(a) Occupationally exposed individual's full name and full social security number.

(b) Occupational specialty code (for example, military occupational specialty, specialty skill identifier, or DA civilian job series).

(c) Location where the individual is presently working and the USADC dosimetry account code.

(d) Administrative dose assessed.

(e) The type of administrative dose assessed (for example, EDEX, SDE, and LDE), as applicable.

(f) Method of determining the administrative dose including the types of dosimeters used (for example, whole body, head-and-neck, wrist, and ring), and additional information used to determine the administrative dose.

(g) Period of time covered by the administrative dose.

(h) Authenticating signature of the RSO.

(4) Maintain a copy of this administrative dose correspondence sent to USADC in each occupationally exposed individual's local dosimetry record file until this administrative dose appears on the individual's lifetime dose history.

j. Doses potentially exceeding Level III in AR 385–10 should follow procedures in AR 385–10.

13–7. Bioassay measurements and internal dose assessment requirements and procedures

a. Bioassay measurements and internal dose assessments are made as described in paragraph 13–3*b* or:

(1) When the types and quantities of RAM licensed for use at the facility could, under normal operational occurrences, result in airborne levels in normally occupied areas exceeding 10 percent of the annual limit on intake (ALI) 200 derived air concentration (DAC) hours per 10 CFR 20.1502.

(2) To confirm the adequacy of radiological controls (such as engineering principles and calculations, and respiratory protection).

(3) To determine compliance with occupational dose limits.

(4) When an NRC license requires it.

(5) When an individual may have received a significant exposure from an incident or to support the ALARA concept.

b. Elements to be considered when establishing a bioassay program include:

(1) Potential exposure pathways to the individual.

(2) Retention and excretion characteristics (chemical and physical form) of the radionuclide.

(3) The sensitivity of the measurement technique needed to achieve these values.

(4) Uncertainties in the estimates of intake and internal radiation doses.

c. All personnel should complete DD Form 1952 before receiving USADC dosimetry or participating in a routine bioassay program (see para 13–8 for additional information on DD Form 1952).

d. The frequency of bioassay measurements is based upon the exposure potential, the physical and chemical characteristics of the RAM, and the route of entry into the body. The RSO should determine the type and frequency of internal exposure assessments.

e. When an occupationally exposed individual meets or exceeds the criteria specified in AR 385–10, the RSO should assess the individual's internal radiation dose by measuring:

(1) Concentrations of RAMs in air in work areas.

(2) Quantities of radionuclides in the body.

(3) Quantities of radionuclides excreted from the body.

(4) Combinations of the measurements listed in paragraphs 13–7*e*(1) through 13–7*e*(3).

f. A variety of radionuclides may be used in research facilities. The potential for exposure to more than 10 percent of the ALI should be evaluated on a case-by-case basis. In particular, the RSO should determine the need, if any, for air monitoring and bioassay for individuals working with low energy beta emitters or alpha emitters. Low energy beta emitters include isotopes such as H–3 tritium, carbon-14, sulfur35, calcium-45, and nickel-63.

g. Provisions should be made for the collection of appropriate samples, analysis of bioassay samples, and evaluation of the results of these analyses, to determine intakes and internal radiation doses. Guidance can be found in 10 CFR 20, 10 CFR 35, and NRC Regulatory Guides 8.9, 8.11, 8.15, 8.20, 8.22, and 8.32. Army guidance can be found in APHC TG 211.

h. DA Form 7689 (Bioassay Information Summary Sheet (BISS)) should accompany all bioassay specimens. Part A of the form should be completed by the RSO or person responsible for collecting the specimen and submitted with all bioassay specimens (see para 13–9 for additional information on the DA Form 7689).

i. The analytical laboratory should forward the results of the bioassay analyses to the RSO and others the RSO designates to include supervisors and the RSSO.

j. The analytical results of the bioassay analyses should include an estimate of uncertainty.

k. The NRC license RSO or health physicist should convert bioassay analytical data to radiation doses following the recommendations in ANSI/HPS N13.30. Any NRC-accepted technique or software can be used to perform the dose calculation. Per 10 CFR 20, a calculation is to be performed if an intake is greater than 10 percent of the ALI or the exposure is greater than 10 percent of the DAC.

(1) The RSO should send a copy of the analytical results of the bioassay analyses, internal dose assessments, all supporting documentation, and the completed DA Form 7689 (Parts A and B) to USADC for inclusion in the individual's lifetime dose record.

(2) The RSO should ensure intakes and internal radiation doses are included in all occupationally exposed individuals' NRC Form 5 (Occupational Dose Record for a Monitoring Period).

l. APHC provides bioassay specimen analyses following the recommendations in ANSI/HPS N13.30, and internal radiation dosimetry assessment services to DA installations and activities on a cost reimbursable basis. Bioassay specimens are submitted through local MTFs to APHC. DA Form 7689, with Part A completed, should be submitted with each bioassay specimen sent to APHC for analysis (see para 13–9).

(1) For information regarding bioassay analyses and internal radiation dosimetry assessment services, contact the APHC Health Physics Program at U.S. Army Public Health Center (MCHB–TS–OHP), 5158

Blackhawk Road, Aberdeen Proving Ground, MD 21010–5403, commercial phone (410) 436–8396 or defense switched network (DSN) 584–8396, or email via usarmy.apg.medcom-aphc.list.org-ohsohs@mail.mil.

(2) For information regarding bioassay sampling materials, collection procedures, sample shipping requirements, and other laboratory related issues, refer to APHC TG 211 or contact the APHC Directorate of Laboratory Services at U.S. Army Public Health Center (MCHB–TS–LID), Sample Management Laboratory, 5158 Blackhawk Road, Aberdeen Proving Ground, MD 21010–5403, commercial phone (410) 278–3714, DSN 298–3714, or fax (410) 436–4108.

(3) For after-hours support, the Deputy Chief of Staff Operations, Emergency Operations Center at APHC can be reached at commercial phone (410) 436–4375 or DSN 584–4375.

(4) Before considering contracting for bioassay services, the DA installation or activity should notify ODASAF for contract technical review. Consideration should be given to the laboratory requirements discussed in this pamphlet and how the analytical results should be assessed to determine internal radiation doses. If the DA installation or activity elects to contract for bioassay service from a non-DA activity, the contract should stipulate that the laboratory providing bioassay services should be certified by the clinical laboratory improvement program and follow the recommendations in ANSI N13.30. If a DoD laboratory or non-DoD laboratory provides the bioassay services, it should be Clinical Laboratory Improvement Amendments certified and accredited by a third-party organization, such as Commission on Office Laboratory Accreditation, a clinical laboratory accreditation organization, or the College of American Pathologists. ODASAF can assist with determining contract requirements.

13–8. DD Form 1952

a. Per 10 CFR 20.2104(f), licensees are required to maintain records of occupational exposure on either NRC Form 4 (Cumulative Occupational Dose History) or an equivalent form.

b. DA personnel are required to use DD Form 1952 to document previous occupational ionizing radiation history. The type of dosimetry provided to the occupationally exposed individual is also included on DD Form 1952.

c. In addition to exposure, DD Form 1952 documents initial training provided to all personnel requiring dosimetry in accordance with AR 385–10.

d. See appendix B for completion instructions and an example of DD Form 1952.

13–9. DA Form 7689

a. DA Form 7689 (Bioassay Information Summary Sheet) should be completed when bioassay specimens are collected and provided to the analysis laboratory and when the internal dosimetry results are submitted to USADC.

(1) The information in Part A should be used by the laboratory analyzing the data. The RSO or person responsible for collecting the specimen should fill out Part A. Check with the analyzing laboratory if there are questions on how to properly fill it out.

(2) Once the dosimetry assessment is complete, the RSO should fill in Part B and submit the DA Form 7689, along with the data of the bioassay specimen, to USADC. USADC should include the results into the individual's dose records as the CEDE, which should be summed with the EDEX for the TEDE. Per 10 CFR 20, a calculation is to be performed if an intake is greater than 10 percent of the ALI or the exposure is greater than 10 percent of the DAC.

b. See appendix C for an example of the DA Form 7689.

13–10. Automated dosimetry record

a. USADC functions include:

(1) Providing a complete occupational dose history as reflected by current repository file information for each occupationally exposed individual upon written request from the RSO.

(2) Providing calendar year-to-date updates on a quarterly basis.

(3) Maintaining dose records of:

(a) Whole body and skin of the whole body.

(b) Head and neck.

(c) Hands and forearms.

(d) Feet and ankles.

(e) Lens of the eye.

(f) Dose to the fetus.

(g) Bioassay data, if known.

b. RSO duties include:

(1) Verifying that all ADR-related information is contained in the ADR. The RSO and USADC should correct any errors by written correspondence.

(2) Signing and dating the ADR to certify the information as the occupationally exposed individual's official dose record.

(3) Reviewing and certifying each of the USADC updates and adding them to each occupationally exposed individual's record. Upon receipt of the current calendar quarter update, the previous update may be destroyed. The fourth quarter report includes all dose data for the entire year and should be retained by the RSO.

13–11. Record retention

a. USADC serves as the central dosimetry records repository for all dosimetry-related records.

b. The ADR, DD Form 1952, and bioassay results should be maintained by the RSO for the duration of employment of the occupationally exposed radiation worker. The records should be kept until they are no longer required for conducting business, but not to exceed 6 years after the radiation worker has left the position per AR 25–400–2. The RSO should review all ADRs and provide corrections to USADC promptly.

c. USADC should retain raw dosimeter readings obtained from personnel badges.

d. USADC functions include:

(1) Retaining these data on a media that can be processed by electronic data processing equipment.

(2) Maintaining databases containing the records of exposure of past and present personnel of DA or GOCO personnel in their entirety on a media that can be processed by electronic data processing equipment.

(3) Scanning paper records electronically into ARIMS, then disposing of the paper records per guidance in AR 25–400–2. (See para 10–3 of this pamphlet, the ARIMS website (https://www.arims.army.mil), and AR 385–10 for additional guidance.)

13–12. Record disposition

Refer to AR 25–400–2 for record disposition requirements for radiation safety at https://www.arims.army.mil. The radiation safety dosimetry files are in the 900A Emergency and Safety folder with disposition times from 0–6 years for local dosimetry files. The RSO should define the period the dosimetry records need to be kept based upon their program to include any NRC regulatory requirements. Keep the records as long as needed locally, but USADC is the repository of Army dosimetry records.

13–13. Employment termination dose reports

a. When an occupationally exposed individual terminates his or her employment from the Army, the RSO should—

(1) Provide a written dose report to such individuals within 30 days after the termination, or within 30 days of when the dose for the final dosimeter wearing period is determined (whichever is later).

(2) Ensure that the occupationally exposed individual's termination includes appropriate identifying data, such as full social security number, dates of employment, and location of employment.

(3) Ensure that the report contains:

(a) The results of any calculations and analyses of any RAM deposited in the body, if applicable.

(b) The name of the installation or activity that provided the individual dosimetry.

(c) The individual's name and full social security number.

(d) The individual's exposure information.

(e) The following statement: "This report is furnished to you under the provisions of the NRC regulation (see 10 CFR 19) or U.S. Department of Labor (DOL) regulation (see 29 CFR 1910). You should preserve this report for further reference."

b. In accordance with DoDI 6055.08, provide the termination dose report to either the former occupationally exposed individual, or to the individual's designee.

13–14. Disclosing information on records

a. For U.S. Nuclear Regulatory Commission licensed material. USADC provides annual reports (NRC Form 5 and ADR) on each individual monitored by external or internal dosimetry to the RSO. The RSO should provide the individual's annual report of occupational dose to each individual who received more than 1 mSv (100 mrem) or upon request. In accordance with 10 CFR 19.13, 10 CFR 20.2206, or 29 CFR 1910.1096(n)(1), the annual occupational dose report should include:

(1) The name of the installation or activity at which the individual was provided personnel dosimetry.

(2) The individual's name and full social security number.

(3) The individual's exposure information.

(4) The following statement: "This report is furnished to you under the provisions of the NRC regulation (see 10 CFR 19) or DOL regulation (see 29 CFR 1910). You should preserve this report for further reference."

b. For non-U.S. Nuclear Regulatory Commission licensed material and/or radiation generating devices. USADC provides annual ADRs on each individual (monitored by external or internal dosimetry) to the RSO. The RSO should advise each individual in the dosimetry program on his or her exposures on at least an annual basis. In accordance with 29 CFR 1910.1096(n)(1) the annual occupational dose report should include:

(1) The name of the installation or activity at which the individual was provided personnel dosimetry.

(2) The individual's name and full social security number.

(3) The individual's exposure information.

(4) The following statement: "This report is furnished to you under the provisions of the DOL regulation (29 CFR 1910). You will preserve this report for further reference."

13–15. Guidance to declared pregnant women

a. Commanders of installations and activities possessing ionizing radiation sources and devices should ensure that the dose to an embryo or fetus due to occupational exposure of a declared pregnant woman does not exceed 5 mSv (500 mrem) during the entire pregnancy, and should not exceed 0.5 mSv (50 mrem) per month per the guidance in 10 CFR 20.1208. The dose to the embryo or fetus is the sum of the EDEX for the declared pregnant woman, the dose to embryo or fetus from radionuclides in the embryo or fetus, and the dose from radionuclides in the declared pregnant woman's body.

b. Command policy will aid with the compliance of the occupational dose limits for declared pregnant women and the commander, RSO, the supervisor of the declared pregnant woman, and the declared pregnant woman will be involved. The commander, RSO, the supervisor of the declared pregnant woman, and declared pregnant woman will make efforts to maintain the monthly occupational radiation exposure rate ALARA and relatively uniform; that is, free of any substantial dose rate variation above the uniform monthly exposure rate.

c. The RSO informs females occupationally exposed to ionizing radiation of the different, lower permissible dose limits applicable to the embryo or fetus during pregnancy. The RSO provides instructions regarding prenatal exposure risks and concerns to the developing embryo or fetus to females occupationally exposed to ionizing radiation. NRC Regulatory Guide 8.13 is typically used to provide this information.

d. A female occupationally exposed to ionizing radiation does not fall under the lower annual permissible dose equivalent for declared pregnant women unless and until she formally declares her pregnancy in writing to the RSO. The RSO notifies the applicable licensee(s) and USADC. A formal declaration of pregnancy, however, is the prerogative of each pregnant woman. A woman occupationally exposed to ionizing radiation should not be intimidated or coerced to declare, or not declare, a pregnancy.

(1) To declare her pregnancy, the woman will voluntarily provide to the RSO a written statement that is dated, signed, and contains the following information. "I hereby make notification that I am occupationally exposed to radiation in the course of my normal job duties and that I am now pregnant. My estimated date of conception is (only month and year is needed). I understand that by declaring my pregnancy, my occupational exposure to ionizing radiation should be controlled as prescribed in AR 385–10."

(2) The RSO should maintain a copy of the written declaration on file for the duration of the pregnancy.

e. A declared pregnant female may revoke her declaration at any time. The revocation should be in writing and maintained by the RSO.

f. Declaring pregnancy should not, in most cases, remove the declared pregnant woman from her normal duties. The supervisor, in coordination with the RSO, should review the female's prior dose history and determine whether or not changes in the duties of the declared pregnant woman are warranted

based on this review. If changes in duties are necessary, the supervisor and RSO should discuss the rationale with the declared pregnant woman.

g. If the dose to the embryo or fetus exceeds 5 mSv (500 mrem) or is within 0.5 mSv (50 m rem) of this dose by the time the woman declares the pregnancy to the RSO, the installation or activity should be in compliance with the guidelines provided in AR 385–10 if the additional dose equivalent to the embryo or fetus does not exceed 0.5 mSv (50 mrem) during the remainder of the pregnancy.

13–16. Planned special exposure

a. Guidance on a planned special exposure (PSE) is provided in 10 CFR 20 and is defined as an infrequent exposure to radiation, separate from and in addition to the annual dose limits.

b. The NRC licensee should—

(1) Request a PSE only in an exceptional situation when alternatives that might avoid the dose estimated to result from the PSE are unavailable or impractical.

(2) Calculate estimated doses, provide details, and justify the PSE in writing to The Surgeon General (TSG), DASAF, and NRC if appropriate.

(3) Receive written authorization from TSG and DASAF.

(4) Provide estimated PSE doses to the individuals and USADC within 30 days from the date of the PSE.

13–17. Emergency exposure dose limits

a. In an emergency, it may be necessary for individuals such as firefighters, emergency response workers, or occupationally exposed individuals to exceed the annual limits. In such a situation, the probable risk of high radiation exposure to the first responder should be weighed against the expected benefits. Responders and incident commanders should understand the risks associated with radiation. Nothing in this chapter should be construed as limiting any immediate actions necessary to protect health and safety.

b. Table 13–2 provides emergency exposure dose limit guidelines for activities where exposures below 50 mSv (5 rem) cannot be maintained. In these special situations, higher doses may be acceptable.

c. The emergency exposure is a once in a lifetime dose, so utilize appropriate personnel as necessary.

Table 13–2
Emergency exposure dose limit guidelines[1]

Total effective dose equivalent guidelines	Activity	Conditions
100 mSv (10 rem)	Protecting valuable property necessary for public welfare (such as a power plant)	Exceeding 50 mSv (5 rem) unavoidable and all appropriate actions taken to reduce dose. Monitoring available to project or measure dose.
250 mSv (25 rem)	Lifesaving or protection of large populations	Exceeding 50 mSv (5 rem) unavoidable and all appropriate actions taken to reduce dose. Monitoring available to project or measure dose.
500 mSv (50 rem)	Lifesaving or protection of large populations	Exceeding 50 mSv (5 rem) unavoidable and all appropriate actions taken to reduce dose. Monitoring available to project or measure dose. If lifesaving emergency responder doses approach or exceed 500 mSv (50 rem), emergency responders should be made fully aware of both the acute and the chronic (cancer) risks of such exposure.

Notes:

[1] Adapted from Edition 73, Federal Register, page 45029 (73 FR 45029).

13–18. Operational exposure guidance during armed conflict or military operations

a. During OCONUS armed conflicts and military deployments, radiation exposure of personnel does not fall under occupational or emergency limits. In these cases, the radiation risks will be weighed against all the other risks based on the priority of the mission during development of OEG by operational commanders as discussed in JP 3–11 and NATO ATP 3.8.1, Volume 1/STANAG 2521.

b. During military deployments in support of U.S. Northern Command or other U.S. agencies, radiation exposure of personnel may fall under emergency exposure dose limits discussed in paragraph 13–17.

c. Commanders, staff, and deployed personnel should understand the risks associated with the associated radiation exposure.

13–19. Dose limits for individual members of the public

a. Commanders of installations and activities should conduct RAM and RGD operations as follows:

(1) The TEDE to individual members of the public from radiation sources under their control does not exceed 1.0 mSv/y (100 mrem/yr) exclusive of:

(a) The dose contribution from any authorized disposal of licensed RAM into the sanitary sewerage system in accordance with 10 CFR 20.2003.

(b) Any dose received as a patient from medical or dental procedures, or participation in medical research programs.

(2) The dose in any unrestricted area from external ionizing radiation sources does not exceed 0.02 mSv (2 mrem) in any 1 hour.

b. Authorization to exceed 1.0 mSv/y (100 mrem/yr), but not to exceed 5.0 mSv/yr (500 mrem/yr), should be requested through command channels and approved by DASAF prior to exceeding the 1.0 mSv (100 mrem) limit. NRC licensees with coordination and approval from DASAF should request authorization from NRC per 10 CFR 20.1301.

c. Facilities or installations regulated by the U.S. Environmental Protection Agency (EPA)'s National Emissions Standards for Hazardous Air Pollutants should limit public exposure per 40 CFR 61.102.

d. General public dose limits apply to members of the public that are permitted to have access to a radiation-controlled area.

e. Host country nationals should follow HN regulations while on OCONUS U.S. military installations where dosimetry is used.

f. 10 CFR 20 applies to all U.S. personnel on OCONUS U.S. military installations and their doses are not tracked by the HN.

13–20. Dose limits to occasionally exposed individuals

a. Occasionally exposed individuals can include such people as messengers, delivery persons, scientists, engineers, managers who witness tests, or inspectors visiting facilities. These individuals normally—

(1) Do not work in a radiation area.

(2) Are not exposed to ionizing radiation as part of their duties.

b. They should not receive a radiation dose in excess of that permitted for any member of the public specified in paragraph 13–19.

13–21. Dose limits for transient operations

a. Transient operations or transient practices may exist which require exposure of individuals, who are not normally occupationally exposed individuals, to levels in excess of the 1.0 mSv (100 mrem) annual public limit.

b. Submit a request for approval of these practices, in advance, to the DASAF. For NRC-regulated material, the licensee needs NRC approval to operate up to an annual dose limit of 5.0 mSv (500 mrem/yr). In any case, the exposure of these individuals should not exceed 5.0 mSv/y (500 mrem/yr). The request should include the following information:

(1) Demonstration of the need for, and the expected duration of, operations in excess of the limit in para 13–19*a*.

(2) Documentation of a program to assess and control dose within the 5.0 mSv (500 mrem) annual limit.

(3) Procedures to be followed to maintain the dose ALARA.

13–22. Personnel Security Screening Systems

The RSP for PSSS should conform to ANSI/HPS N43.17. The annual effective dose to an individual subject to irradiation by PSSS is limited to 0.25 mSv (25 mrem) for a single source or venue. Additionally, the following requirements apply:

a. General-use systems produce an effective dose per screening of 0.25 µSv (0.025 mrem) or less. Due to the low effective dose per screening, these systems can be used without regard to the number of individuals scanned or the number of scans per year. No special precautions are required for pregnant

women or children. Check manufacturers specifications for determining the type of PSSS installed. If further assistance is needed, consult ANSI/HPS N43.17 and the RSSO.

b. Limited-use systems produce an effective dose per scan greater than 0.1 µSv (0.01 mrem), and less than 10 µSv (1.0 mrem). Users of PSSS in this category ensure that subjects do not exceed 0.25 mSv (25 mrem) per year as a result of scanning with a given source or at a given venue. Alternative means should be considered for the screening of pregnant women and children. Check manufacturers specifications for determining the type of PSSS installed. If further assistance is needed, consult ANSI/HPS N43.17 and the RSSO.

13–23. Cargo and vehicle security screening systems

a. Cargo and vehicle security screening systems are intended for scanning cargo and vehicles and are not designed for personnel scanning. Under normal operating circumstances, these systems are operated in such a manner that avoids intentionally scanning personnel. In circumstances where there is an external threat, such as vulnerability to sniper fire, cargo screening systems may be used as limited-use systems as described in paragraph 13–22*b*. Screening may be accomplished with a combination of engineering controls and administrative controls.

b. Radiation source based cargo and vehicle security screening systems have the potential to exceed the aggregate quantities limits as described in paragraph 11–2 when more than one device is stored in the same location. Such aggregation requires implementing the increased security controls as described in chapter 11.

Chapter 14
Motor Vehicle, Pedestrian, and Bicycle Safety

14–1. Introduction

This chapter provides guidelines to assist commanders in establishing an effective motor vehicle, pedestrian, and bicycle safety program. These motor vehicle safety tactics, techniques, and procedures are designed to prevent motor vehicle related mishaps involving Army personnel and personnel that travel on Army installations.

14–2. Army motor vehicle operations

At minimum, commanders should address the following in local policy:

a. Supervisors of Army motor vehicles operations.

(1) Ensure an assistant driver is assigned in accordance with AR 385–10.

(2) Verify operators meet rest, duty time, and alcohol restriction requirements.

(3) Verify whether personnel are taking prescription or nonprescription medication that may impair driving or alertness.

(4) Assess operator performance periodically and use incentives to reward drivers with good driving records.

(5) Report hazardous conditions of Army motor vehicles to the vehicle dispatcher or unit maintenance personnel.

(6) Ensure personnel operating or riding in or on a tactical or combat vehicle are trained and have rehearsed crew evacuation, rollover, and fire drills.

b. Senior occupant. The senior occupant of an Army motor vehicle is the senior ranking individual present or, in the case of a combat vehicle, the vehicle commander and is responsible for the overall safety of the occupants.

(1) Ensure requirements of this pamphlet, AR 385–10, and AR 600–55 are met.

(2) Ensure the vehicle is operated in a safe manner and according to applicable standards and traffic safety laws.

(3) Ensure operators are licensed for the vehicles they are operating.

(4) Prevent operators who appear fatigued or who are physically, emotionally, or mentally impaired from operating a vehicle.

(5) Ensure operators obey headphone and listening devices, operator distraction, and alcohol consumption restrictions.

(6) Ensure vehicle occupants use occupant restraints at all times.

(7) Ensure the authorized seating capacity of the vehicle is not exceeded.

(8) Assist the operator in identifying unsafe mechanical conditions of the vehicle and report according to organization's SOP.

(9) Identify road and/or other driving hazards.

c. Motor vehicle operators.

(1) Operate vehicles in a safe manner. This includes complying with local speed limits; vehicle speed limits; operating limits; municipal, state, and federal laws; SOFAs; and military vehicle regulations.

(2) Report use of medications that could reasonably impair driving or alertness to the immediate supervisor.

(3) Report hazardous vehicle conditions to supervisor and unit maintenance personnel, and report defects according to the provisions established in DA Pam 750–8.

(4) After seeking emergency aid, report mishaps immediately to the supervisor and to the vehicle dispatcher.

(5) Ensure that the cargo has been properly loaded and secured prior to and during transport.

(6) Wear installed restraint systems and ensure passengers use installed restraint systems at all times. Personnel performing emergency medical care are exempt from the restraint use requirement.

(7) Ensure vehicles and their contents are properly secured when left unattended, to include setting the emergency brake and adequately chocking or blocking the wheels.

(8) Safely ensure that highway warning devices are properly displayed when the vehicle stops on or beside the roadway.

(9) Post warning triangles to alert approaching traffic when the vehicle is disabled or halted in a location that obstructs traffic.

(10) Use ground guides according to the provisions of AR 385–10, TC 3–21.60, and TC 21–305–20.

(11) Properly execute rollover and emergency procedures when required.

(12) Ensure all required safety equipment is present, current, functional, and accessible according to the standards outlined in the appropriate operator's manual.

(13) Report to the commander/supervisor any traffic violations received from traffic authorities, on or off post.

d. Motor vehicle occupant/passengers.

(1) Wear appropriate PPE and comply with occupant protection requirements outlined in AR 385–10.

(2) Assist operator(s) in identifying hazards as necessary.

(3) Do not expose more than head and shoulders (name tag defilade) while riding in tactical vehicles that have hatches, except when actively engaging targets with the vehicle mounted weapons systems.

14–3. Pedestrian safety

When establishing a pedestrian safety program consider the following:

a. Separating pedestrian and motor vehicle traffic to the maximum extent possible.

b. Posting regulatory speed limit signs at all vehicle entrances to military installations. In concentrated troop areas (for example, company areas and billeting areas) and along all routes of troop march, regulating signs should be posted that specifically limit vehicle speeds around troops.

c. Constructing sidewalks, pedestrian crossings, handicap access ramps, and bicycle paths in accordance with AASHTO–MUTCD.

d. Establishing procedures to protect children walking to and from school, entering and exiting school buses, and playing in DoD housing areas.

e. Prohibiting individuals from skating, jogging, running, or walking on roadways during high traffic density and peak traffic periods. Designate which roadways and times that apply, to include designated routes for organized physical training formations that should limit exposure of troops to motor vehicle traffic.

f. Requiring use of reflective outer garments and/or equipment during hours of limited visibility for personnel running (not in troop formation).

g. Prohibiting wearing of portable headphones, earphones, ear, or other listening devices while jogging, running, bicycling, skating, or skateboarding on or adjacent to roadways or roadway intersections on DoD installations.

h. Wearing approved protective headgear while using powered and nonpowered scooters, skateboards, roller skates, and roller blades. Hand, elbow, and knee protection is highly recommended for these types of activities.

14–4. Bicycle safety

a. Bicycle safety is an integral part of each installation traffic safety program.

b. Require the use of bicycle helmets approved by the U.S. Consumer Product Safety Commission (CPSC) by all personnel, including family members, who ride bicycles on Army installations. Previously purchased bicycle helmets certified by the American Society for Testing and Materials may also be worn, but when purchasing a new helmet riders should look for the CPSC certification. OCONUS, riders may wear HN-approved helmets if the helmet meets or exceeds CPSC standards.

c. Commanders should use RM procedures to determine exceptions to the helmet requirement for government-owned three-wheeled bicycles that are operated within operational work areas.

d. Prohibit wearing headphones, earphones, ear, or other listening devices while bicycling on or adjacent to roadways on installations.

e. When bicycling on roadways on installations during hours of darkness or reduced visibility, ensure bicycles are equipped with operable headlights and taillights, and it's recommended that bicyclists wear a retro-reflective upper outer garment.

Chapter 15
Contract Safety

15–1. Introduction

Contractors working on Army installations or involved in Army operations are responsible for the SOH of their workforce while preventing exposure to government personnel, facilities, equipment, and the general public, and for following OSHA and applicable federal agency regulations and standards, regardless of whether expressly stated in contractual agreements. Contractors are required to establish and maintain an SOH program tailored to meet OSHA and other applicable federal agency regulations and standards as well as contractual safety requirements. The focus of OSHA and other federal agency regulations and standards is on personnel safety and regulatory compliance, while contractual safety requirements safeguard government resources. DOL provides the administration and enforcement of OSHA standards for government contractors in accordance with FAR 22.102–2(c).

15–2. Scope

This chapter establishes contract standards and procedures in accordance with policy and responsibilities prescribed in AR 385–10 and provides guidance for managing risk-associated contract operations. For requirements regarding NRC/state licensing and ARPs, see 32 CFR 655.

15–3. Contract safety process

The contract safety process consists of five steps, as depicted in figure 15–1.

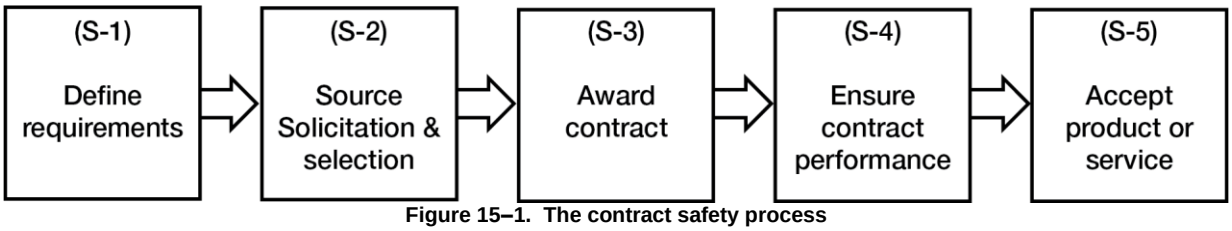


Figure 15–1. The contract safety process

a. Step 1 (S–1), define requirements. See figure 15–2.

(1) *Conduct risk assessment (identify and assess hazards) (S–1–1).*

(a) The requiring activity conducts a risk assessment for the proposed operation to identify and assess hazards to government personnel, facilities, equipment, and the general public.

1. The requiring activity completes planning to define requirements. The contracting community assists in the formulation of the requirements packet.

2. When the requiring activity identifies hazards to government, personnel, facilities, or equipment, the supporting safety office staff should aid in the development of the project performance work statement (PWS) or statement of work (SOW) to ensure mitigation of SOH hazards. Risk assessments should focus

on identifying hazards to the U.S. Government, with the final goal of providing an overall risk level. Other types of risk may also be assessed during the requirements development phase, including financial, anti-terrorism/force protection, personnel security, and so forth to determine total operational risk.

3. The PWS or SOW should be reviewed by a multidisciplinary working group to assess hazards. This review may include safety professionals, attorneys, acquisition personnel, cost estimators, accountants, technical specialists, engineers, and so forth. The requiring activity should clearly document the risk assessment. This assessment may also need to address task orders from existing blanket purchase agreements.

(b) The requiring activity establishes the initial risk level associated with hazards to government personnel, facilities, equipment, and the general public.

1. The requiring activity establishes an initial risk level based on the risk assessment.

2. Supporting safety staffs should review risk assessments at the minimum when initial risk levels are high or extremely high. Requiring activities should consider nominating safety professionals for COR duties to increase focus on safety elements when the risk is high or extremely high.

(2) *Develop contract safety controls (develop controls) (S–1–2).*

(a) The requiring activity determines the methodology to mitigate risk to government personnel, facilities, equipment, and the general public during contract performance and coordinates this information with the contracting officer (KO).

1. The requiring activity analyzes the risk assessment and reviews figure 15–3 to determine which FAR, Defense Federal Acquisition Regulation Supplement (DFARS), and Army Federal Acquisition Regulation Supplement clauses are appropriate, including the mishap prevention clause with Alternate I (see FAR 52.236–13).

2. Supporting safety staff evaluates and reviews high-risk and extremely high-risk operations and recommends the inclusion of necessary clauses, including the mishap prevention clause with Alternate I, when appropriate (see FAR 52.236–13).

(b) The requiring activity develops contract-specific safety controls.

1. The requiring activity determines whether the proposed mission would create a multi-employer workplace as described in paragraph 15–8. If government personnel have the potential to work in the same workplace as the contractor, the requiring activity should address roles and responsibilities in their local SOP necessary to identify the contractor as the controlling employer, while not making the contractor responsible for inherently governmental responsibilities.

2. The requiring activity uses the risk assessment to determine whether the hazards require contract-specific safety controls (beyond those addressed in figure 15–3) for inclusion in PWS/SOW.

3. The requiring activity includes requirements for mishap reporting, as appropriate, in accordance with AR 385–10 and DA Pam 385–40.

4. The requiring activity should include requirements for all operations to comply with the standards promulgated by OSHA under Section 651 Title 29, United States Code (29 USC 651) or HN requirements in all nonmilitary unique DoD operations and workplaces, regardless of whether work is performed by military, DA Civilian, or contract personnel.

5. The requiring activity should identify the requirements for notification of radiation mishaps/incidents to include radiological contamination of the facility, equipment, and environment and the overexposure of personnel (see app D). The requiring activity includes requirements for the contractor to report to the COR/KO any radiation mishaps/incidents that have been reported to the NRC or an agreement state. The contractor should also report any radiation mishap/incident of RAM covered under an ARA or ARP to the COR/KO. This notification should include any event having public awareness or the potential for such awareness. The contractor should also report any NRC or agreement state inspections and any notice of violation received to the COR/KO.

(c) The requiring activity establishes safety controls. Based on the analyses outlined in paragraph 15–3*a*(2)(*b*), the requiring activity develops a list of recommended safety controls, requirements, and clauses for inclusion in the PWS/SOW.

(d) The requiring activity determines whether a deliverables list should be included in PWS/SOW.

1. If the proposed contract should create a multi-employer workplace, include a requirement for the contractor to provide a site-specific safety program SOP as the controlling employer.

2. Supporting safety staff should recommend deliverables when risk levels are high and extremely high. When required, the requiring activity should use DD Form 1423 (Contract Data Requirements List),

designating the data that is to be provided to the government. DD Form 1423 identifies each item of data requested as deliverable in the delivery order.

(3) *Include safety in surveillance plan (make risk decisions) (S–1–3).*

(a) The requiring activity should establish the frequency and type of safety surveillance based upon the risk assessed in paragraph 15–3*a*(2). Base surveillance schedules on identified hazards and, when available, the individual contractor's safety history, current level of performance, complexity of operations, and mission criticality. When risk is high or extremely high, supporting safety staff should provide input for the surveillance plan.

(b) Surveillance requirements may be necessary for the following operations and clauses, as identified using figure 15–3 and table 15–1:

1. Construction and demolition.
2. Hazardous materials or operations.
3. Reutilization actions for material and property.
4. Transportation of radioactive, explosive, and other hazardous materials.
5. Aviation and ship critical safety items.
6. AE operations.

(c) Identify surveillance requirements for licensing and operations involving RAM/RGD.

(4) *Document residual risk (implement risk controls) (S–1–4).*

(a) The requiring activity reviews the recommended safety controls and ensuing residual risk to determine whether any additional controls are required to further manage risk. If additional hazards are identified, the requiring activity and supporting safety staff should review available controls and develop new controls per paragraph 15–3*a*(2).

(b) The requiring activity documents the final residual risk on the risk assessment and provides the final controls to the KO for inclusion in the PWS/SOW.

(c) The requiring activity accepts risk at the proper level of authority in accordance with DA Pam 385–30 and includes the risk assessment in the requirement packet and documents contract safety controls in the surveillance plan.

(d) Organizations should use the safety approval steps (L7) in the General Fund Enterprise Business System (GFEBS) to track safety elements for the command review process.

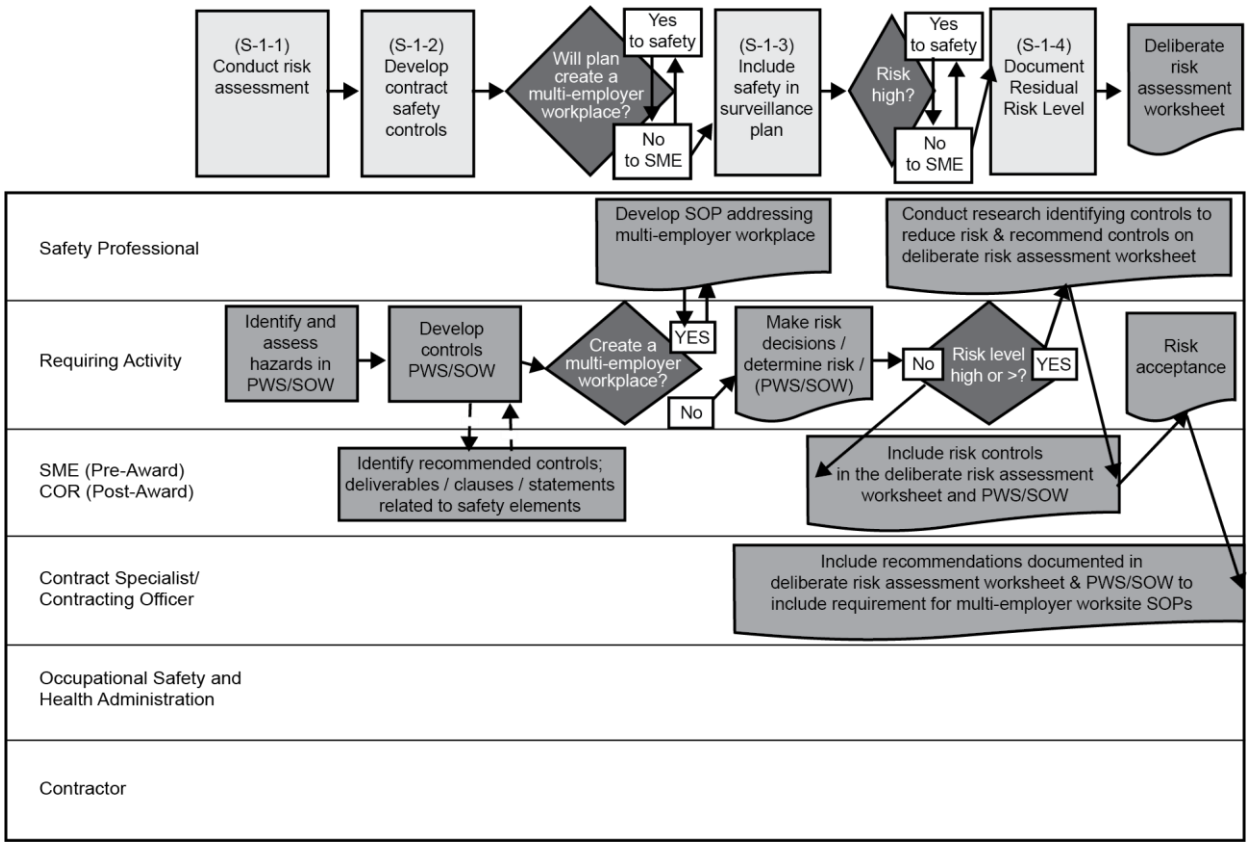


Figure 15–2. The contract safety process: S–1, define requirements

Risk Level[1]	Condition	Safety Element Recommendation
No Recognized Risk	No recognized risk to Government Personnel, Facilities, or Equipment	• Walsh-Healey Public Contracts Act clause at FAR 52.222-20 (as prescribed by FAR Subpart 22.610) • Service Contract Act of 1965 clause at FAR 52.222-41 (as prescribed by FAR Subpart 22.1006(a) • Notification of Potential Safety Issues clause at DFARS 252.246-7003 (as prescribed by DFARS Subpart 246.370)
Low Risk	Expected mishaps have little or no impact on accomplishing the mission; probability and severity is not expected to result in an Army accident.	• Include clauses in "No Recognized" Risk Category, above • Accident Prevention clause at FAR 52.236-13 (as prescribed in FAR Subpart 36.513) • When hazardous materials, radioactive materials, ammunition, explosives, and/or aviation elements are contemplated, include safety-related clauses identified in Figure 15-5
Medium	Expected mishaps have moderate impact on accomplishing the mission; probability and severity could be expected to result in an Army Class-D accident.	• Include clauses in "No Recognized" Risk and "Low" Risk Categories, above • When hazardous materials, radioactive materials, ammunition, explosives, and/or aviation elements are contemplated, include safety-related clauses identified in Figure 15-5
High Risk	Expected mishaps have high impact on accomplishing the mission; probability and severity could be expected to result in an Army Class B or C accident	• Include clauses in "No Recognized" Risk, "Low" Risk, and "Medium" Risk Categories, above • Accident Prevention with Alternate 1 clause at FAR 52.236-13 (as prescribed in FAR Subpart 36.513) with Safety Professional recommended appointment as a SME COR • When hazardous materials, radioactive materials, ammunition, explosives, and/or aviation elements are contemplated, include safety-related clauses identified in Figure 15-5
Extremely High Risk	Expected mishaps have extremely high impact on accomplishing the mission; probability and severity could be expected to result in an Army Class-A accident	• Include clauses and recommendations in "No Recognized" Risk, "Low" Risk, "Medium" Risk, and "High" Risk Categories, above • When hazardous materials, radioactive materials, ammunition, explosives, and/or aviation elements are contemplated, include safety-related clauses identified in Figure 15-5

Note: 1. See DA Pam 385-30 for additional standards regarding the assessment of risk and the establishment of a risk level.

Figure 15–3. Safety clause decision matrix (this graphic should be seen in color for complete clarity)

Table 15–1
Safety Element/Clause Quick Reference-

Service Contracts
General Safety Program Statement (SOW, PWS) (FAR 9.104–1 General standards; FAR 9.104–2 Special Standards; 37.110 Solicitation provisions and contract clauses)
FAR 52.208–5 Condition of Leased Vehicles (As prescribed in 8.1104(b))
FAR 52.222–20 Walsh-Healey Public Contracts Act (Manufacturing and Remanufacturing only, all others see Service Contract Act of 1965 Subpart 22.10)
FAR 52.222–41 (h) Service Contract Act of 1965 (As prescribed in 22.1006(a)/37.107 Service Contract Act of 1965)
FAR 52.236–13 Mishap Prevention (As prescribed in 36.513)
FAR 52.236–13 Mishap Prevention; Alternate I (Nov 1991) (As prescribed in 36.513)
FAR 52.237–2 Protection of Government Buildings, Equipment, and Vegetation
FAR 52.247–68 Report of Shipment (REPSHIP) (As prescribed in 47.208–2)
DFARS 252.223–7303 Hexavalent Chromium
DFARS 252.223–7004 Drug-Free Work Force (As prescribed in 223.570–2)
DFARS 252.223–7006 Prohibition on Storage and Disposal of Toxic and Hazardous Materials (As prescribed in 223.7103(a))
DFARS 252.223–7008 Prohibition of Hexavalent Chromium (As prescribed in 223.7306)
DFARS 252.246–7003 Notification of Potential Safety Issues (As prescribed in 246.371(a))
Construction Contracts
General Statement (SOW, PWS)
FAR 52.222–41 (h) Service Contract Act of 1965 (As prescribed in 22.1006(a)/37.107 Service Contract Act of 1965)
FAR 36.507 Permits and Responsibilities
FAR 52.236–7 Permits and Responsibilities
FAR 52.236–13 Mishap Prevention (As prescribed in 36.513)
FAR 52.247–68 Report of Shipment (REPSHIP) (As prescribed in 47.208–2)
DFARS 252.246–7003 Notification of Potential Safety Issues (As prescribed in 246.371(a))
DFARS 252.223–7006 Prohibition on Storage and Disposal of Toxic and Hazardous Materials (As prescribed in 223.7103(a))
DFARS 252.223–7008 Prohibition of Hexavalent Chromium (As prescribed in 223.7306)
Supplies Contracts
FAR 52.247–68 Report of Shipment (REPSHIP) (As prescribed in 47.208–2)
DFARS 252.223–7008 Prohibition of Hexavalent Chromium (As prescribed in 223.7306)
Hazardous Materials
FAR 52.223–3 Hazardous Material Identification and Material Safety Data (As prescribed in 23.303)
FAR 52.247–68 Report of Shipment (REPSHIP) (As prescribed in 47.208–2)
DFARS 252.223–7001 Hazard Warning Labels (As prescribed in 223.303)
DFARS 252.223–7006 Prohibition on Storage and Disposal of Toxic and Hazardous Materials (As prescribed in 223.7103(a))
DFARS 252.223–7006 Prohibition on Storage and Disposal of Toxic and Hazardous Materials Alternate I (As prescribed in 223.7103(b))
DFARS 252.246–7003 Notification of Potential Safety Issues (As prescribed in 246.371(a))
Radioactive Material
Subpart 52.223–7 Notice of Radioactive Material (As prescribed in 23.601(d)/23.602)
FAR 52.247–68 Report of Shipment (REPSHIP) (As prescribed in 47.208–2)

Table 15–1 Safety Element/Clause Quick Reference—Continued
Ammunition and Explosives
FAR 52.247–68 Report of Shipment (REPSHIP) (As prescribed in 47.208–2)
DFARS 252.223–7002 Safety Precautions for Ammunition and Explosives (As prescribed in 223.370–5)
DFARS 252.223–7003 Change in Place of Performance–Ammunition and Explosives (As prescribed in 223.370–5)
DFARS 252.223–7008 Prohibition of Hexavalent Chromium (As prescribed in 223.7306)
Aviation and Missiles
FAR 52.247–68 Report of Shipment (REPSHIP) (As prescribed in 47.208–2)
DFARS 252.209–7010 Critical Safety Items (As prescribed in 209.270–5)
DFARS 252.228–7001 Ground and Flight Risk (As prescribed in 228.370(b))
DFARS 252.228–7005 Mishap Reporting and Investigation Involving Aircraft, Missiles, and Space Launch Vehicles (As prescribed in 228.370(d))
DFARS 252.236–7005 Airfield Safety Precautions (As prescribed in 236.570(b)(3))

b. Step 2 (S–2), source solicitation and selection. See figure 15–4.

(1) *Include safety in site survey (S–2–1).* Based on the risk assessment, requiring activities/KOs request support from their supporting safety offices when:

(a) Planning the initial site survey.

(b) Safety personnel participation in site surveys is needed, primarily when risk levels are high and extremely high. Safety-related surveys are required per DoD 4145.26–M for contracts involving AE.

(c) Communicating safety issues to the proposed contractor.

(2) *Include safety in pre-award conference (S–2–2).*

(a) Based on the risk assessment, requiring activities/KOs request support from their supporting safety offices when:

1. Including safety assessments in pre-award conferences.

2. Safety personnel participation in the pre-award conference is needed, primarily when risk levels are high and extremely high.

3. Communicating safety issues to the proposed contractor.

(3) *Analyze and evaluate safety elements of the proposal (S–2–3).*

(a) Based on the risk assessment, the requiring activity/KO identifies the level of effort required to execute safety roles and responsibilities in order to determine the need for training of the requiring activity/SME/COR and/or the nomination of safety staff for duties as safety COR when risk levels are high or extremely high.

(b) The requiring activity and supporting safety office should evaluate the proposed methods of performing work. Concerns should be brought to the attention of the KO. The evaluation should address the following elements:

1. *Contractor knowledge.* Demonstrate a thorough knowledge of contract safety requirements, identified hazards, and protective measures associated with the solicited products or services.

2. *Proposed operations.* Evaluate offers' proposals ("offers" and "proposals" are intended to include bids, bidders, and quotes) for manufacturing processes, tests, storage, handling, transportation, disposal, and so forth related to compliance with contract safety requirements. Identify hazards not addressed and propose methods of control for specific hazards.

3. *Personnel and training.* The contractor should determine how many personnel are anticipated for the new operations and require training, and determine whether the proposed plan creates a multi-employer workplace.

4. *Facilities and equipment.* If new facilities and equipment are required, determine if these should meet the safety requirements. Evaluate the prospective contractor's ability to provide safe facilities and equipment before production begins.

5. *Licenses/permits.* If proposed contract work requires the prospective contractor to possess federal, state, local, and HN licenses or permits, the requiring activity should determine if these are current or acceptable applications documented.

6. *Subcontractors.* If the prospective contractor proposes to subcontract a portion of contract work that is hazardous in nature, the requiring activity should evaluate the capability of the prime contractor to establish control of subcontractor(s) and verify subcontractor(s) compliance with the safety requirements of the contract. Prime contractors are responsible to the U.S. Government for compliance with all contractual terms.

(4) *Review contractor safety performance (S–2–4).*

(a) The requiring activity should review the past safety performance of proposed contractors in accordance with the solicitation's evaluation factors. If required, the requiring activity should request assistance of the supporting safety staff. This research may include:

1. *Safety history.* A review of past safety survey reports by DoD, federal, state, or local safety, fire prevention, or regulatory authorities that may impact the safety of proposed operations.

2. *Mishap history.* A review of records focused on annual OSHA mishap summary sheets, including damage involving property. Gear the review toward mishaps affecting past, current, or proposed contracts.

3. *Waivers and exemptions.* A review of safety-related exemptions or waivers granted for past or current contracts.

(b) The requiring activity reviews the contractor's ability to comply with SOH requirements. If required, requiring activity should request assistance of the supporting safety staff. Assistance may include:

1. *Current operations.* An evaluation of the contractor's current compliance with proposed safety requirements, focused on the protection of government resources.

2. *Safety program, organization, and training.* A review of the effectiveness of current safety programs to ensure contractual compliance within established multi-employer workplaces.

3. *Current facilities.* Assessment of current operations focused on compliance with regulations, codes, requirements, and proposed contract safety requirements. This includes current compliance with specific AE or other contract facility requirements. The requiring activity should review facilities used for the proposed work and should, when applicable, include other facilities that could adversely affect contract related facilities.

4. *Onsite survey.* An onsite evaluation of the prospective contractor's ability to perform the proposed work in compliance with the safety requirements of the contract, focused on preserving government resources. The KO should determine whether onsite pre-award safety survey is necessary; when feasible, the safety portion of the survey may be conducted in conjunction with other pre-award surveys.

(c) The requiring activity documents findings regarding safety performance on the risk assessment, compares offers based on their performance, and makes recommendations.

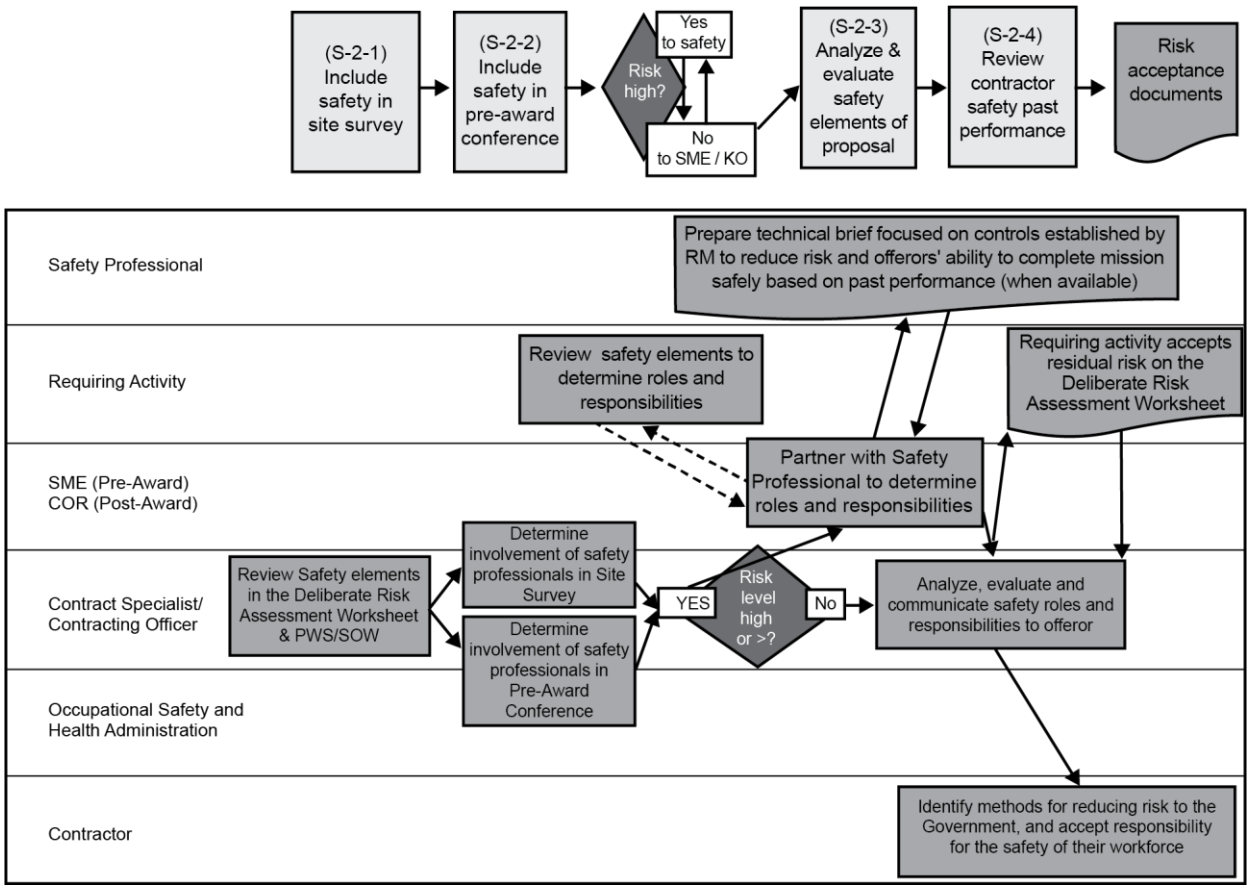


Figure 15–4. The contract safety process: S–2, source solicitation and selection

c. Step 3 (S–3), award contract. See figure 15–5.

(1) *Review offer's plan for safety elements (S–3–1).*

(a) The requiring activity reviews the offer's safety plan to verify it includes elements identified in proposal focused on the protection of government personnel, facilities, and equipment.

1. The requiring activity should request assistance from their supporting safety staff, particularly when the risk is high or extremely high or when additional expertise is required.

2. The safety plan may be a detailed plan addressing SOH requirements, quality system and assurance requirements, and similar items, or a submission of a summary plan accompanied by a statement to provide more detailed plans if selected.

3. The requiring activity should document concurrence or nonconcurrence with the offer's safety plan and provide to the COR or KO. The COR and KO should determine actions to be taken in the event of nonconcurrence with the offer's safety plan.

4. When the requiring activity proposes the use of an installation or facility not under the requiring activity's command, the installation or facility commander should concur with the offer's safety plan prior to contract award.

(2) *Include safety in post-award conference (S–3–2).*

(a) The requiring activity/KO develops briefings to discuss the risk assessment, controls, and the surveillance plan. The requiring activity should request supporting safety staff assistance to develop a briefing for risk assessment when high and extremely high risk, or when additional expertise is required. Conduct post-award orientation conferences to assure that all matters requiring clarification or resolution between contractor and government are considered and contractual requirements understood. Safety briefings may include:

1. A discussion of the safety requirements specified in the contract.

2. The function, frequency, and scope of surveys, discrepancy reporting, and corrective action requests and methods.

3. The contractor's plans to satisfy the safety requirement of the contract.

4. The status of the pre-award commitment. Verify whether the contractor commitment has or has not been satisfied; initiate corrective action if commitments have not been satisfied.

5. The contractor's mishap notification and investigation procedures.

6. The protection of government resources.

7. A discussion on the requirements and procedures for the submission of waiver requests, site and construction plans, and other required reports, documentations, approvals, requests, and so forth.

(3) *Analyze and accept safety deliverables (S–3–3).*

(a) The requiring activity coordinates timelines for the submittal of deliverables, and contractor submits all requirements for deliverables to KO.

(b) The requiring activity reviews deliverables and coordinates with supporting safety staff for recommendations when hazards include high and extremely high risk, or when additional expertise is required. The requiring activity/COR notifies the KO upon acceptance of, or concerns with, the deliverables.

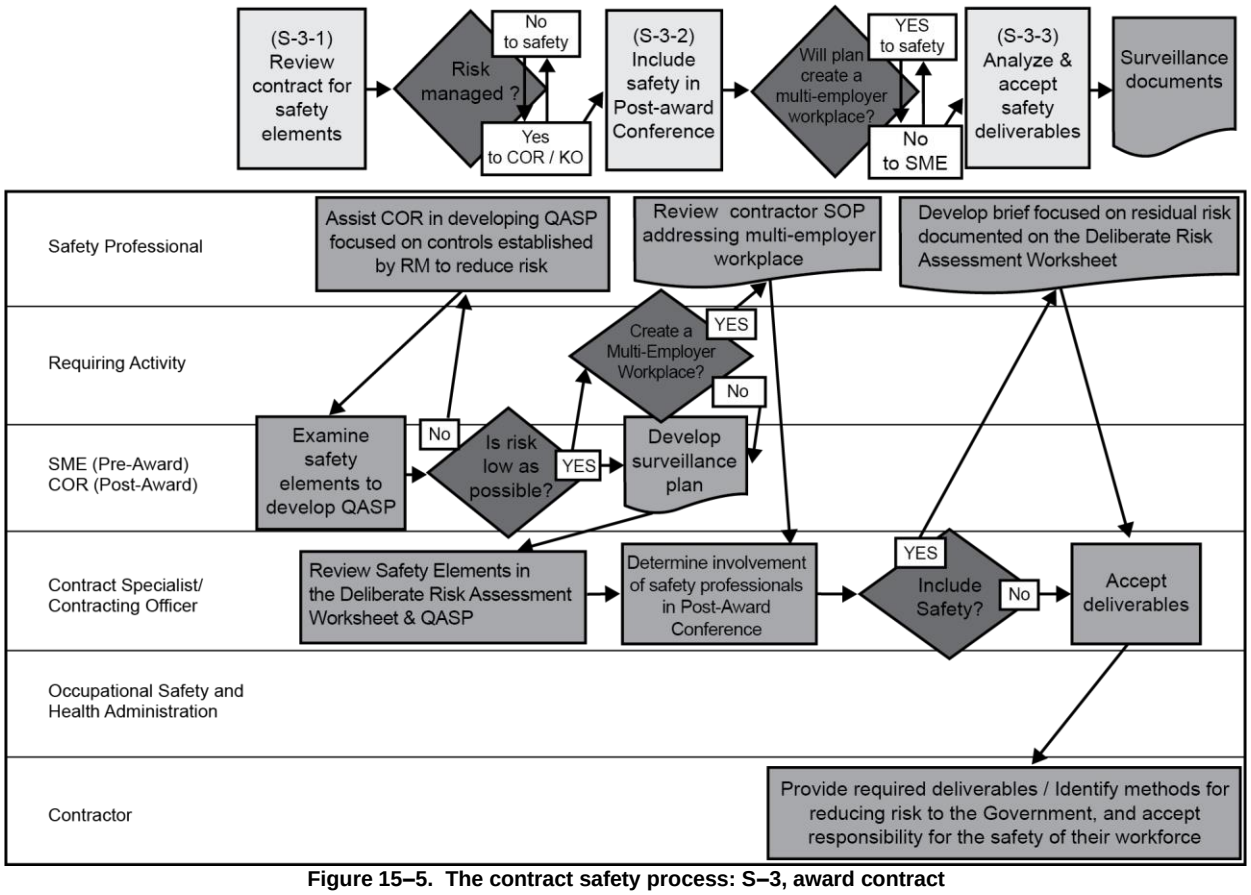


Figure 15–5. The contract safety process: S–3, award contract

d. Step 4 (S–4), ensure contract performance. See figure 15–6.

(1) *Ensure contractor is meeting safety contract requirements (S–4–1).*

(a) The COR surveys contractor performance in accordance with the quality assurance surveillance plan (QASP) to verify contractor's safety plan is established and effective, while the safety staff provides support to the COR when risk levels are high or extremely high or when additional expertise is required. The COR should document and report safety findings to the KO.

(b) Post-award safety surveys should include:

1. Analysis of safety elements included in the QASP.

2. Contractors safety program staffing, organization, and management, including effectiveness.

3. Operational procedures, hazard analysis, and compliance with contract safety requirements focused on protecting government personnel, facilities, and equipment whether in use or storage.

4. Control of hazardous material and the disposal/disposition procedures.

5. Site plans, waivers, quantity distances issues, and exposures between production facilities and product lines.

6. Information pertaining to federal or state OSHA inspections conducted along with any outstanding notices of violations.

7. Mishaps, illnesses, and injury reports, including OSHA 300 Form (Log of Work-Related Injuries and Illnesses) information for comparison to the national average for the same type of industry.

(c) The COR/KO should request assistance from supporting safety staff when identified hazards are beyond their capability for analysis and remedy. The COR should notify the KO if they identify any non-compliance or conditions that poses a serious or imminent danger to the health or safety of the public or government personnel. When contractor fails to comply with OSHA standards the KO should consult the supporting safety office and determine the need to contact the area OSHA office for coordination in conducting an OSHA site visit.

(d) The KO should take appropriate action if the contractor fails or refuses to take prompt corrective action to remedy deficiencies in meeting safety contract requirements, including issuing an order stopping all or part of the work until implementation of satisfactory corrective action.

(2) *Report mishap impact on cost/schedule/performance (S–4–2).*

(a) The COR/requiring activity/KO conducts analysis and documents the operational impact of mishaps on cost/schedule/performance.

(b) Supporting safety staff conducts investigations or provides recommendations when Class A through D Army mishaps occur.

(3) *Conduct mishap trending (S–4–3).*

(a) The COR/requiring activity identifies mishap trends with a focus on prevention. The supporting safety staff should provide input on trends and prevention measures.

(b) The COR/requiring activity should document trends and compare them to past performance.

(4) *Operation startup, lockout, or restart.*

(a) Prior to initiating contracted operations or restarting contracted operations as a result of an equipment lockout, procedural noncompliance, or a mishap, the KO should ensure the requiring activity has obtained concurrence of the installation or facility commander.

(b) The KO should take immediate steps to support the installation or facility commander’s authority to stop contracted operations if procedural noncompliance results in an unacceptable risk.

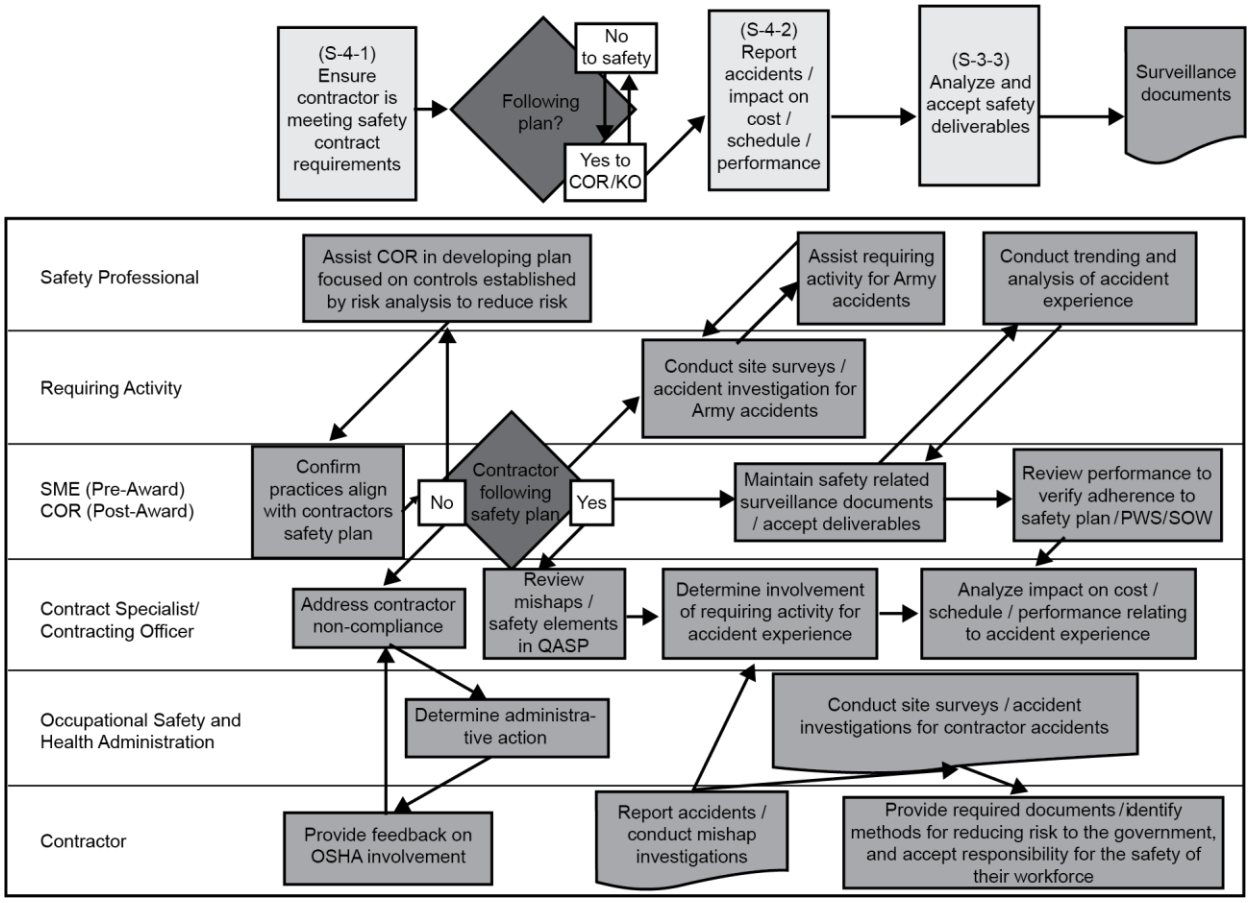


Figure 15–6. The contract safety process: S–4, ensure contract performance

e. Step 5 (S–5), accept product or service. See figure 15–7.

(1) *Verify safety requirements have been completed (S–5–1).*

(a) The COR/KO reviews performance documents to verify adherence to safety plan. Supporting safety staff should provide recommendations when risk levels are high or extremely high.

(b) The KO should take appropriate action if the contractor fails or refuses to take prompt corrective action, including issuing an order stopping all or part of the work until implementation of satisfactory corrective action.

(2) *Include safety in the past performance evaluation (S–5–2).*

(a) The COR/KO reviews performance for input into the past performance evaluation.

(b) The supporting safety staff provides recommendations when appropriate.

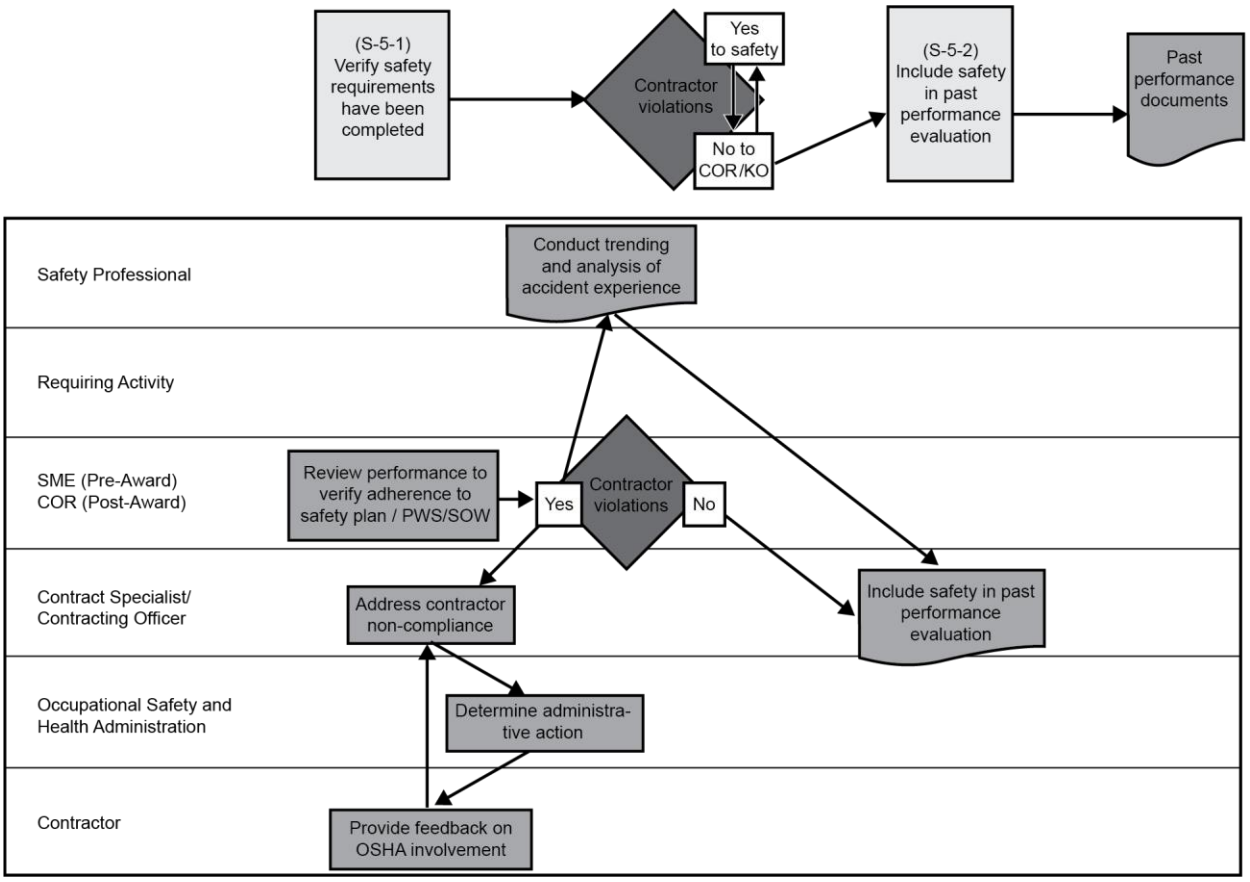


Figure 15–7. The contract safety process: S–5, accept product or services

15–4. Contractual requirements for construction

a. Army construction contracts fall within the purview of EM 385–1–1; use the version in effect at the time of contract award to ensure that adequate safety requirements are included in all Army construction contracts. Construction contracts include, but are not limited to, new construction, remodeling, repair, landscaping, assembly of prefabricated structures, and so forth.

b. Construction and architect-engineer contracts should include clause FAR 52.236–13 and should include UFGS 01 35 26 (formerly 01525) as appropriate.

c. Per the standards in paragraph 15–4*a*, construction contracts should include the requirement for the contractor to have a site-specific safety plan. Tailor the plan to the project based on the size and complexity of the construction project.

15–5. Government purchase cards

a. Services. When micropurchase or simplified purchases for services (for example, landscaping or janitorial) are being considered, the requiring activity should complete a risk assessment to determine and control risk level to government personnel, facilities, or equipment while accepting risk at the appropriate command levels.

b. Supplies classified as hazardous materials. When purchasing hazardous materials (for example, paint, industrial chemicals, and so forth) for use by the requiring activity, the request should be staffed through the supporting safety office for risk assessment and compatibility, to include review of the SDSs, in the Hazardous Material Information System.

c. Construction (small projects). When making simplified purchases for small construction projects, the requiring activity should complete a risk assessment to determine and control risk level to government personnel, facilities, or equipment while accepting risk at the appropriate command levels. Utility systems and facilities will be designed, operated, and maintained so as to protect the health and safety of the

military, family members, civilian work force, and contractors in accordance with AR 385–10. When available, the requiring activity contacts the Directorate of Public Works for approval before modifying government facilities (see para 15–4).

d. Other. For additional information regarding the use of the government purchase card, refer to the DA Government Purchase Card Operating Procedures and the Department of Defense Government Charge Card Guidebook for Establishing and Managing Purchase, Travel, and Fuel Card Programs.

15–6. Contractual requirements for radiation

a. Radioactive materials and radiation generating devices. Contracts will include a radiation clause as follows:

(1) "The contractor should not use any RAMs or RGDs without the approval of the Government."

(2) "When the contractor chooses to furnish any items under the contract that should contain any source, byproduct, or special nuclear material per 10 CFR, the contractor should provide a list of the RAM to the Government for approval."

b. U.S. Nuclear Regulatory Commission and agreement state licenses. The NRC or agreement state license and, if applicable, NRC Form 241 (Report of Proposed Activities in Non-Agreement States, Areas of Exclusive Federal Jurisdiction, or Offshore Waters) on reciprocity on federal land, should be in place before contractor integration, possession, manufacturing, distribution, and storage of the RAM, component, or item. A copy of the contractor's NRC or agreement state license application (and, if applicable, NRC Form 241) and the eventual NRC license or agreement state license should be provided to the supporting ACOM, ASCC, DRU, and ARNG RSSO in the safety office in order to review the application and license, and to assure government requirements per 10 CFR and AR 385–10 are met. The contractor, during its application for an NRC or agreement state license, should immediately notify the U.S. Government of its requirement for NRC licensing. The contractor, under its NRC or agreement state license, should account for possession, system integration, distribution, storage, records, and document transfer of the RAM, component, or item to include documenting transfer to another NRC or agreement state licensee. The contractor should provide information on the RGDs so the ACOM, ASCC, DRU, and ARNG RSSO can review the information and ensure that the RGD and program supporting the RGD meets government requirements covered in AR 385–10 on ARAs.

c. Verification of authorization to receive or ship radioactive material. The U.S. Government should not issue direction to the contractor to ship RAMs, commodities, components, or end items without prior written verification from the supporting ACOM, ASCC, DRU, and ARNG RSSO or Army NRC license RSO to ensure the Army receiving destination, organization, and consignee are authorized by an NRC or agreement state license and, if applicable, an ARP is in place per 32 CFR 655 to receive the RAMs, commodities, components, or end items. Nor should the contractor upon the contractor's own initiative receive RAMs, commodities, components, or end items without prior written verification from the contractor RSO listed on the contractor NRC or agreement state licenses that the receiving destination, organization, and consignee is authorized by a contractors NRC or agreement state license and, if applicable, an ARP is in place to receive the RAMs, commodities, components, or end items.

d. Radiation generating devices. Contractor use of RGDs that can create a high radiation area or very high radiation area on federal land or may cause exposure to Soldiers and DA Civilians should meet the requirements of AR 385–10 and be covered under an ARA issued by the ACOM, ASCC, DRU, and ARNG RSSO in coordination with the COR/KO.

15–7. Occupational Safety and Health Administration inspections of contract activities

See DoDI 6055.01 for procedures applicable to OSHA inspections of contract activities.

15–8. Multi-employer worksites

a. Under the Occupational Safety and Health Act of 1970, all employers have a statutory duty to comply with OSHA standards and to exercise reasonable diligence to determine whether violations of those standards exist.

b. On multi-employer worksites, more than one employer may be citable for a hazardous condition that violates an OSHA standard. OSHA follows a two-step process in determining responsibility per OSHA Instruction CPL–2–0.124.

(1) OSHA determines whether the employer is a creating, exposing, correcting, or controlling employer (see para 15–8*c*). An employer may have multiple roles (see para 15–8*c*(5)).

(2) Once the role of the employer has been defined, OSHA determines if the employer's actions were sufficient to meet its obligations. (Only exposing employers can be cited for general duty clause violations.)

c. Refer to the following definitions for terms in paragraph 15–8*b*:

(1) *Creating employer.* The employer that caused a hazardous condition that violates an OSHA standard. An employer that does so is citable even if the only personnel exposed are those of other employers at the site.

(2) *Exposing employer.* An employer whose own personnel are exposed to the hazard. If the exposing employer created the violation, it is citable for the violation as a creating employer. If another employer created the violation, the exposing employer is citable if it knew of the hazardous condition or failed to exercise reasonable diligence to discover the condition and failed to take steps consistent with its authority to protect its personnel. If the exposing employer has authority to correct the hazard, it should do so. If the exposing employer lacks the authority to correct the hazard, it is citable if it fails to do each of the following:

(a) Ask the creating and/or controlling employer to correct the hazard.

(b) Inform its personnel of the hazard.

(c) Take reasonable alternative protective measures. In extreme circumstances (for example, imminent danger situations), the exposing employer is citable for failing to remove its personnel from the job to avoid the hazard.

(3) *Correcting employer.* An employer who is engaged in a common undertaking, on the same worksite, as the exposing employer and is responsible for correcting a hazard. This usually occurs where an employer is given the responsibility of installing and/or maintaining particular safety/health equipment or devices. The correcting employer should exercise reasonable care in preventing and discovering violations and meet its obligations of correcting the hazard.

(4) *Controlling employer.* An employer who has general supervisory authority over the worksite, including the power to correct safety and health violations itself or require others to correct them is considered a controlling employer. Control can be established by contract or, in the absence of explicit contractual provisions, by the exercise of control in practice. Descriptions of different kinds of controlling employers are given in paragraphs 15–8*c*(4)(*a*) through 15–8*c*(4)(*d*). A controlling employer should exercise reasonable care to prevent and detect violations on the site. The extent of the measures that a controlling employer should implement to satisfy this duty of reasonable care is less than what is required of an employer with respect to protecting its own personnel. This means that the controlling employer is not normally required to inspect for hazards as frequently or to have the same level of knowledge of the applicable standards or of trade expertise as the employer it has hired. There are several types of controlling employers:

(a) Control established by contract. In this case, the employer has a specific contract right to control safety. To be a controlling employer, the employer should itself be able to prevent or correct a violation or to require another employer to prevent or correct the violation. One source of this ability is explicit contract authority. This can take the form of a specific contract right to require another employer to adhere to safety and health requirements and to correct violations the controlling employer discovers.

(b) Control established by a combination of other contract rights. Where there is no explicit contract provision granting the right to control safety, or where the contract says the employer does not have such a right, an employer may still be a controlling employer. The ability of an employer to control safety in this circumstance can result from a combination of contractual rights that, together, give it broad responsibility at the site involving almost all aspects of the job. Its responsibility is broad enough so that its contractual authority necessarily involves safety. The authority to resolve disputes between subcontractors, set schedules, and determine construction sequencing are particularly significant because they are likely to affect safety.

(c) Architects and engineers. Architects, engineers, and other entities are controlling employers only if the breadth of their involvement in a construction project is sufficient to bring them within the parameters discussed in paragraphs 15–8*c*(4)(*a*) and 15–8*c*(4)(*b*).

(d) Control without explicit contractual authority. Even where an employer has no explicit contract rights with respect to safety, an employer can still be a controlling employer if, in actual practice, it exercises broad control over subcontractors at the site.

(5) *Multiple roles.*

(a) A creating, correcting, or controlling employer can also be an exposing employer.

(b) An exposing, creating, and controlling employer can also be a correcting employer if they are authorized to correct the hazard.

Appendix A

References

Section I

Required Publications

Unless otherwise indicated, DA publications are available on the Army Publishing Directorate website at https://armypubs.army.mil/. DoD issuances are available at https://www.esd.whs.mil/dd/. The CFR is available at https://www.ecfr.gov/. The USC is available at https://uscode.house.gov/. NRC publications are available at https://www.nrc.gov.

AASHTO–MUTCD
American Association of State Highway and Transportation Officials, Manual on Uniform Traffic Control Devices (Cited in para 9–29.) (Available at https://mutcd.fhwa.dot.gov/pdfs/2009r1r2/pdf_index.htm.)

APHC TG 211
Radiobioassay Collection Labeling and Shipping Requirements (Cited in para 13–7*g*.) (Available at https://phc.amedd.army.mil/topics/labsciences/lsm/pages/lids.aspx.)

AR 11–34
The Army Respiratory Protection Program (Cited in para 6–6*d*.)

AR 25–22
The Army Privacy Program (Cited in para 11–3*c*(2).)

AR 25–30
Army Publishing Program (Cited in title page.)

AR 25–400–2
The Army Records Information Management System (ARIMS) (Cited in para 10–3*b.*)

AR 40–5
Preventive Medicine (Cited in para 6–6*c*.)

AR 40–8
Temporary Flying Restrictions due to Exogenous Factors Affecting Aircrew Efficiency (Cited in para 6–4*a*(1).)

AR 40–21
Medical Aspects of Army Aircraft Accident Investigation (Cited in para 6–4*a*(1).)

AR 40–501
Standards of Medical Fitness (Cited in para 6–4*a*(1).)

AR 70–1
Army Acquisition Policy (Cited in para 10–4*b*.)

AR 95–1
Flight Regulations (Cited in para 6–2*b*(2)(*a*).)

AR 190–13
The Army Physical Security Program (Cited in para 11–4*b*.)

AR 190–51
Security of Unclassified Army Resources (Sensitive and Nonsensitive) (Cited in para 11–4*b*.)

AR 200–1
Environmental Protection and Enhancement (Cited in para 6–6*g*.)

AR 350–1
Army Training and Leader Development (Cited in para 2–3*c*(2).)

AR 385–10
The Army Safety and Occupational Health Program (Cited in para 1–1.)

AR 385–63/MCO 3570.1C
Range Safety (Cited in para 9–28*b*.)

AR 420–1
Army Facilities Management (Cited in para 5–9*d*.)

AR 600–55
The Army Driver and Operator Standardization Program (Selection, Training, Testing, and Licensing) (Cited in para 6–6*l*.)

AR 600–105
Aviation Service of Rated Army Officers (Cited in para 6–4*a*(1).)

AR 608–1
Army Community Service (Cited in title page.)

AR 700–68/DLAI 4145.25/NAVSUPINST 4440.128D/AFJMAN 23–227(I)/MCO 10330.2D
Storage and Handling of Liquefied and Gaseous Compressed Gasses and Their Full and Empty Cylinders (Cited in para 6–6*g*.)

AR 700–141
Hazardous Materials Information Resource System (Cited in para 6–6*g*.)

AR 700–143/DLAR 4145.41/NAVSUPINST 4030.55D/AFMAN 24–210_IP/MCO 4030.40C
Packaging of Hazardous Material (Cited in para 6–6*g*.)

AR 710–2
Supply Policy Below the National Level (Cited in para 6–6*g*.)

AR 750–1
Army Materiel Maintenance Policy (Cited in para 6–6*h*.)

AR 750–43
Army Test, Measurement, and Diagnostic Equipment (Cited in para 10–10*a*.)

DA Pam 40–501
Army Hearing Program (Cited in para 6–6*c*.)

DA Pam 40–503
The Army Industrial Hygiene Program (Cited in para 2–3*e*(7)(*b*).)

DA Pam 70–3
Army Acquisition Procedures (Cited in para 10–4*b*.)

DA Pam 190–51
Risk Analysis for Unclassified Army Resources (Cited in para 11–4*b*.)

DA Pam 385–30
Risk Management (Cited in para 15–3*a*(4)(*c*).)

DA Pam 385–40
Army Accident Investigations and Reporting (Cited in para 2–3*b*(1)(*a*).)

DA Pam 385–63
Range Safety (Cited in para 9–34.)

DA Pam 385–64
Ammunition and Explosives Safety Standards (Cited in para 2–5*a*.)

DA Pam 385–69
Safety Standards for Microbiological and Biomedical Laboratories (Cited in para 9–32.)

DA Pam 738–751
Functional User's Manual for the Army Maintenance Management System–Aviation (Cited in para 6–2*b*(2).)

DA Pam 750–8
The Army Maintenance Management System (TAMMS) User's Manual (Cited in para 14–2*c*(3).)

DoD 4145.26–M
DoD Contractor's Safety Manual for Ammunition and Explosives (Cited in para 15–3*b*(1)(*b*).)

DoDI 6050.05
DoD Hazard Communication (HAZCOM) Program (Cited in para 6–6*b*.)

DoDI 6055.01
DoD Safety and Occupational Health (SOH) Program (Cited in para 2–2*a*.)

EM 385–1–1
Safety and Health Requirements (Cited in para 2–3*a*(10).) (Available at https://www.publications.usace.army.mil/usace-publications/engineer-manuals/.)

FAR 22.102–2
Administration (Cited in para 15–1.) (Available at https://www.acquisition.gov/browse/index/far.)

FAR 52.236–13
Accident Prevention (Cited in para 15–3*a*(2)(*a*)1.) (Available at https://www.acquisition.gov/browse/index/far.)

ICRP Publication 26
Recommendations of the ICRP (Cited in table 13–1.) (Available at https://www.icrp.org/page.asp?id=5.)

ICRP Publication 60
1990 Recommendations of the International Commission on Radiological Protection (Cited in table 13–1.) (Available at https://www.icrp.org/page.asp?id=5.)

ICRP Publication 103
2007 Recommendations of the International Commission on Radiological Protection (Cited in table 13–1.) (Available at https://www.icrp.org/page.asp?id=5.)

JP 3–11
Operations in Chemical, Biological, Radiological, and Nuclear Environments (Cited in para 10–12*d*.) (Available at Available at https://www.jcs.mil/doctrine/.)

MIL–STD–101C
Color Code for Pipelines and for Compressed Gas Cylinders (Cited in para 9–23*a*(8).) (Available at https://quicksearch.dla.mil/qssearch.aspx.)

NATO ATP 3.8.1, Volume 1/STANAG 2521
CBRN Defence on Operations (Available at https://nso.nato.int/nso/nsdd/listpromulg.html.) (Cited in para 10–12*d*.)

NFPA 30
Flammable and Combustible Liquids Code (Cited in para 6–6*g*.)

NFPA 70
National Electrical Code (Cited in 9–31.)

NFPA 101
Life Safety Code (Cited in para 9–23*a*(11).)

NFPA 291
Recommended Practice for Fire Flow Testing and Marking of Hydrants (Cited in para 9–24*c*(2).)

NRC Regulatory Guide 1.86
Termination of Operating Licenses for Nuclear Reactors (Cited in para 12–4*b*(2).)

NRC Regulatory Guide 8.9
Acceptable Concepts, Models, Equations, and Assumptions for a Bioassay (Cited in para 13–7*g*.)

NRC Regulatory Guide 8.11
Applications of Bioassay for Uranium (Cited in para 13–7*g*.)

NRC Regulatory Guide 8.13
Instruction Concerning Prenatal Radiation Exposure (Cited in para 13–15*c*.)

NRC Regulatory Guide 8.15
Acceptable Programs for Respiratory Protection (Cited in para 13–7*g*.)

NRC Regulatory Guide 8.20
Application of Bioassay for Radioiodine (Cited in para 13–7*g*.)

NRC Regulatory Guide 8.22
Bioassay at Uranium Mills (Cited in para 13–7*g*.)

NRC Regulatory Guide 8.32
Criteria for Establishing a Tritium Bioassay Program (Cited in para 13–7*g*.)

NUREG 1556
Consolidated Guidance about Materials Licenses, Volumes 1–21 (Cited in para 10–8*a*.)

NUREG 1575
Multi-Agency Radiation Survey and Site Inspection Manual (MARSSIM) (Cited in para 12–1*b*.)

NUREG 1757, Volume 2
Consolidated Decommissioning Guidance: Characterization, Survey, and Determination of Radiological Criteria (Cited in para 12–3*c*.)

NUREG 2155
Implementation Guidance for 10 CFR Part 37, “Physical Protection of Category 1 and Category 2 Quantities of Radioactive Material” (Cited in para 11–1.)

OSHA Instruction CPL–2–0.124
Multi-Employer Citation Policy (Available at https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=2024&p_table=directives.) (Cited in para 15–8*b*.)

Public Law 91–596
Occupational Safety and Health Act of 1970 (Available at https://www.osha.gov/laws-regs/oshact/completeoshact.) (Cited in para 2–3*a*(19).)

SAE AMS–STD–595
Colors Used in Government Procurement (Cited in table 9–5.) (Available at https://www.sae.org/.)

TB MED 523
Control of Hazards to Health from Microwave and Radio-Frequency Radiation and Ultrasound (Cited in para 9–36.)

TB MED 524
Control of Hazards to Health from Laser Radiation (Cited in para 6–6*e*.)

TB 43–0108
Handling, Storage, and Disposal of Army Aircraft Components Containing Radioactive Materials (Cited in para 6–6*e*.)

TB 43–0116
Identification of Radioactive Items in the Army (Cited in para 6–6*e*.)

TB 43–0133
Hazard Controls for CECOM Radiofrequency and Optical Radiation Producing Equipment (Cited in para 6–6*e*.)

TB 43–180
Calibration and Repair Requirements for the Maintenance of Army Materiel (Cited in para 10–10*c*.)

TB 750–25
Maintenance of Supplies and Equipment Army Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Repair Support (C&RS) Program (Cited in para 10–10*c*.)

TC 3–04.10
Aviation Life Support Maintenance (Cited in para 6–6*j*.)

TC 3–21.60
Visual Signals (Cited in para 14–2*c*(10).)

TC 21–305–20
Manual for the Wheeled Vehicle Operator (Cited in para 14–2*c*(10).)

TM 1–1500–328–23
Aeronautical Equipment Maintenance Management Procedures (Cited in para 6–6*h*.)

TM 38–250
Preparing Hazardous Materials for Military Air Shipments (Cited in para 6–6*g*.)

TM 38–410
Storage and Handling of Hazardous Materials (Cited in para 6–6*g*.)

UFGS 01 35 26
Governmental Safety Requirements (Available at https://www.wbdg.org/.) (Cited in para 15–4*b*.)

10 CFR 19
Notices, Instructions, and Reports to Workers: Inspection and Investigations (Cited in para 13–13*a*(3)(*e*).)

10 CFR 20
Standards for Protection Against Radiation (Cited in para 12–4*b*(1)(*b*).)

10 CFR 30
Rules of General Applicability to Domestic Licensing of Byproduct Material (Cited in para 10–3*d*(1).)

10 CFR 31
General Domestic Licenses for Byproduct Material (Cited in para 10–4*e*.)

10 CFR 35
Medical Use of Byproduct Material (Cited in para 13–7*g*.)

10 CFR 37
Physical Protection of Category 1 and Category 2 Quantities of Radioactive Materials (Cited in para 11–1.)

10 CFR 40.36
Financial assurance and recordkeeping for decommissioning (Cited in para 10–3*d*(1).)

10 CFR 70.25
Financial assurance and recordkeeping for decommissioning (Cited in para 10–3*d*(1).)

29 CFR 1904
Recording and Reporting Occupational Injuries and Illnesses (Cited in para 2–3*b*(3)(*c*).)

29 CFR 1910 Subpart H
Hazardous Materials (Cited in para 6–6*g*.)

29 CFR 1910
Occupational Safety and Health Standards (Cited in para 6–6*f*.)

29 CFR 1910.19
Special provisions for air contaminants (Cited in para 6–6*f*.)

29 CFR 1910.97
Nonionizing Radiation (Cited in para 6–6*e*.)

29 CFR 1910.106
Flammable Liquids (Cited in para 6–6*a*.)

29 CFR 1910.134
Respiratory Protection (Cited in para 6–6*d*.)

29 CFR 1910.135
Head protection (Cited in para 6–6*f*.)

29 CFR 1910.137
Electrical protective equipment (Cited in para 6–6*f*.)

29 CFR 1910.156
Fire brigades (Cited in para 6–6*f*.)

29 CFR 1910.252
General Requirements (Cited in para 6–6*a*.)

29 CFR 1910.253
Oxygen-fuel gas welding and cutting (Cited in para 9–30.)

29 CFR 1910.1096
Ionizing radiation (Cited in para 6–6*e*.)

29 CFR 1910.1200
Hazard communication (Cited in para 6–6*b*.)

29 CFR 1960
Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters (Cited in para 2–3*d*(2)(*a*).)

32 CFR 655
Radiation Sources on Army Land (Cited in para 15–2.)

40 CFR 61.102
Standard (Cited in para 13–19*c*.)

73 FR 45029
Planning Guidance for Protection and Recovery Following Radiological Dispersal Device (RDD) and Improvised Nuclear Device (IND) Incidents (Cited in table 13–2.) (Available at https://www.federalregister.gov/.)

10 USC 1588
Authority to accept certain voluntary services (Cited on title page.)

29 USC 651
Congressional statement of findings and declaration of purpose and policy (Cited in para 15–3*a*(2)(*b*)4.)

Section II

Prescribed Forms

Unless otherwise indicated, DA Forms are available on the Army Publishing Directorate website at https://armypubs.army.mil/. DD Forms are available at https://www.esd.whs.mil/directives/forms/.

DA Form 2696
Operational Hazard Report (Prescribed in para 6–2*b*.)

DA Form 4755
Employee Report of Alleged Unsafe or Unhealthful Working Conditions (Prescribed in para 2–3*d*(3)(*a*).)

DA Form 7689
Bioassay Information Summary Sheet (BISS) (Prescribed in para 13–7*h*.)

DD Form 1423
Contract Data Requirements List (Prescribed in para 15–3*a*(2)(*d*)2.)

DD Form 1952
Dosimeter Application and Record of Occupational Radiation Exposure (Prescribed in para 13–5*a*.)

DD Form 2977
Deliberate Risk Assessment Worksheet (Prescribed in para 5–1.)

NRC Form 241
Report of Proposed Activities in Non-Agreement States, Areas of Exclusive Federal Jurisdiction, or Offshore Waters (Prescribed in para 15–6*b*.) (Available at https://www.nrc.gov/reading-rm/doc-collections/forms/.)

Appendix B

Guidance for DD Form 1952

B–1. Individuals required to complete DD Form 1952

Personnel in the dosimetry program, occupationally exposed individuals, visitors, and transient personnel who work in or frequent a restricted area, regardless of whether they are issued a dosimeter, will complete DD Form 1952. Figure B–1 provides an example of a DD Form 1952.

B–2. Completion instructions for DD Form 1952

a. Refer to figure B–1. The following applies to all individuals referred to in paragraph B–1:

(1) Complete blocks 1 through 10.

(2) Within the Occupational Exposure History section, list name, address, and dates of occupational exposure at each location, if known.

(3) Initial the statement in block 16.

(4) Initial the applicable statement in block 17.

(5) Sign and date the statement shown, to include the reading and understanding of the Privacy Act Statement on the back of DD Form 1952, in block 18.

(6) Complete a new DD Form 1952 for each requirement for personnel dosimetry.

b. The RSO—

(1) Ensures that blocks 11 through 19 are completed.

(2) Determines the type of personnel dosimetry required based on the duties listed in blocks 11 and 13.

(3) Requests, in writing, the previous occupational dose histories for occupationally exposed individuals who meet the conditions requiring individual dosimetry as specified in paragraph B–1.

(a) To request an individual's personnel dose history from USADC, include—

1. Full name.
2. Maiden name, if applicable.
3. Full social security number.
4. Military service number, if applicable.
5. Date of birth.
6. If applicable, the ACOM or organization to which the dosimetry program was assigned and in which the dosimeter was worn by individual.
7. Locations of occupational exposure, if known.

(b) For other Services and federal, state, or civilian employers, provide information per that organization's guidance to obtain individual dose history information. Individual dose history should be provided to USADC for each civilian employer specified on the DD Form 1952. If, after 6 months from the date of the written request for individual dose history, no reply is received, the RSO will assume, for the purposes of administrative controls for the current year, that the allowable dose limit for the individual is reduced by 1.25 rem (12.5 mSv) for each quarter for which records were unavailable and the individual was engaged in activities that could have resulted in occupational radiation exposure. An individual subject to these administrative controls will not be available for PSEs.

(4) Annotate the DD Form 1952 (in the Health Physics Use Only areas) with the date that the individual's previous occupational dose history(ies) was requested from each previous civilian employer.

(5) Check block 14 if a baseline internal dose to the body was received, analyzed, and reported prior to beginning the dosimetry program. The baseline will determine if the person has any radionuclides in his or her body from a previous exposure to internal RAMs.

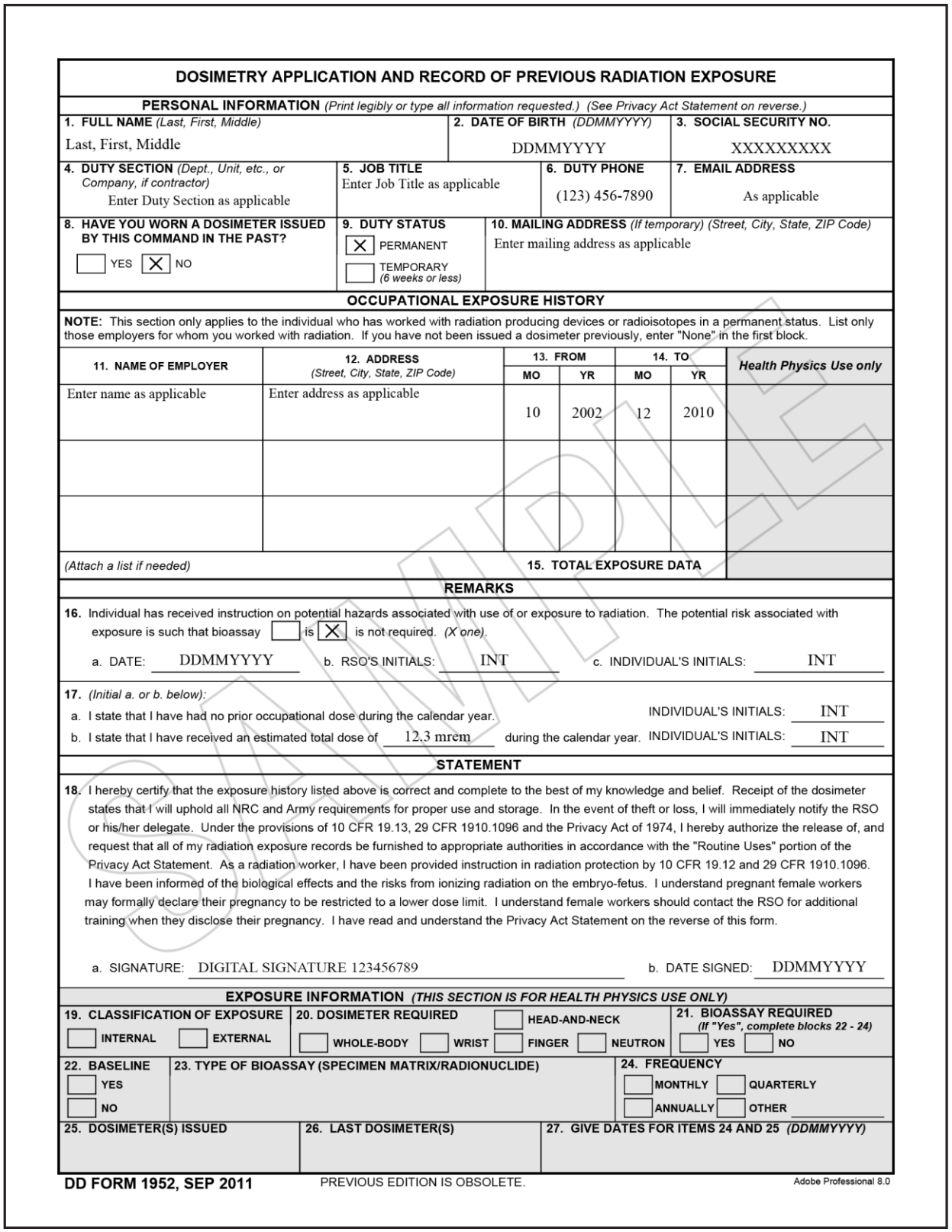
(6) Enter in block 19 the date of the last time the person on the dosimetry program wore a dosimeter.

(7) Instruct the individual on the potential hazards of radiation exposure.

(8) Review the information in the Remarks section, include the date, initial, and sign the appropriate statement (see fig B–1). The form can be digitally initialed and signed using a CAC. Once the form is fully initialed and signed, the data in the personal information section will be locked to ensure protection of the information.

c. For additional guidance on DD Form 1952, see the online USADC Customer Handbook (CAC required).

B–3. Additional guidance
See paragraph 13–8 for additional information concerning this form.



DOSIMETRY APPLICATION AND RECORD OF PREVIOUS RADIATION EXPOSURE

PERSONAL INFORMATION *(Print legibly or type all information requested.) (See Privacy Act Statement on reverse.)*

1. FULL NAME *(Last, First, Middle)*	2. DATE OF BIRTH *(DDMMYYYY)*	3. SOCIAL SECURITY NO.
Last, First, Middle	DDMMYYYY	XXXXXXXXX

4. DUTY SECTION *(Dept., Unit, etc., or Company, if contractor)*	5. JOB TITLE	6. DUTY PHONE	7. EMAIL ADDRESS
Enter Duty Section as applicable	Enter Job Title as applicable	(123) 456-7890	As applicable

8. HAVE YOU WORN A DOSIMETER ISSUED BY THIS COMMAND IN THE PAST?	9. DUTY STATUS	10. MAILING ADDRESS *(If temporary) (Street, City, State, ZIP Code)*
[ ] YES [X] NO	[X] PERMANENT [ ] TEMPORARY *(6 weeks or less)*	Enter mailing address as applicable

OCCUPATIONAL EXPOSURE HISTORY

NOTE: This section only applies to the individual who has worked with radiation producing devices or radioisotopes in a permanent status. List only those employers for whom you worked with radiation. If you have not been issued a dosimeter previously, enter "None" in the first block.

11. NAME OF EMPLOYER	12. ADDRESS *(Street, City, State, ZIP Code)*	13. FROM		14. TO		*Health Physics Use only*
		MO	YR	MO	YR	
Enter name as applicable	Enter address as applicable	10	2002	12	2010	
(Attach a list if needed)		15. TOTAL EXPOSURE DATA				

REMARKS

16. Individual has received instruction on potential hazards associated with use of or exposure to radiation. The potential risk associated with exposure is such that bioassay [ ] is [X] is not required. *(X one).*

a. DATE: DDMMYYYY b. RSO'S INITIALS: INT c. INDIVIDUAL'S INITIALS: INT

17. *(Initial a. or b. below):*

a. I state that I have had no prior occupational dose during the calendar year. INDIVIDUAL'S INITIALS: INT

b. I state that I have received an estimated total dose of 12.3 mrem during the calendar year. INDIVIDUAL'S INITIALS: INT

STATEMENT

18. I hereby certify that the exposure history listed above is correct and complete to the best of my knowledge and belief. Receipt of the dosimeter states that I will uphold all NRC and Army requirements for proper use and storage. In the event of theft or loss, I will immediately notify the RSO or his/her delegate. Under the provisions of 10 CFR 19.13, 29 CFR 1910.1096 and the Privacy Act of 1974, I hereby authorize the release of, and request that all of my radiation exposure records be furnished to appropriate authorities in accordance with the "Routine Uses" portion of the Privacy Act Statement. As a radiation worker, I have been provided instruction in radiation protection by 10 CFR 19.12 and 29 CFR 1910.1096. I have been informed of the biological effects and the risks from ionizing radiation on the embryo-fetus. I understand pregnant female workers may formally declare their pregnancy to be restricted to a lower dose limit. I understand female workers should contact the RSO for additional training when they disclose their pregnancy. I have read and understand the Privacy Act Statement on the reverse of this form.

a. SIGNATURE: DIGITAL SIGNATURE 123456789 b. DATE SIGNED: DDMMYYYY

EXPOSURE INFORMATION ***(THIS SECTION IS FOR HEALTH PHYSICS USE ONLY)***

19. CLASSIFICATION OF EXPOSURE	20. DOSIMETER REQUIRED	21. BIOASSAY REQUIRED *(If "Yes", complete blocks 22 - 24)*
[ ] INTERNAL [ ] EXTERNAL	[ ] HEAD-AND-NECK [ ] WHOLE-BODY [ ] WRIST [ ] FINGER [ ] NEUTRON	[ ] YES [ ] NO

22. BASELINE	23. TYPE OF BIOASSAY (SPECIMEN MATRIX/RADIONUCLIDE)	24. FREQUENCY
[ ] YES [ ] NO		[ ] MONTHLY [ ] QUARTERLY [ ] ANNUALLY [ ] OTHER

25. DOSIMETER(S) ISSUED	26. LAST DOSIMETER(S)	27. GIVE DATES FOR ITEMS 24 AND 25 *(DDMMYYYY)*

DD FORM 1952, SEP 2011 PREVIOUS EDITION IS OBSOLETE. Adobe Professional 8.0

Figure B–1. Sample DD Form 1952

PRIVACY ACT STATEMENT
DATA REQUIRED BY THE PRIVACY ACT OF 1974
(5 USC 552a)

PRESCRIBING DIRECTIVE: AR 385-10.

AUTHORITY: 5 USC 301 - Departmental Regulation: Purposes; 42 USC 2073, 2093, 2095, 2111, 2133, 2134, 2201(b), and 2201(o). The authority for soliciting the social security number is 10 CFR 20; 44 USC 3101 - Record Management by Agency Heads, General Duties.

PRINCIPAL PURPOSE(S): To establish qualification of personnel monitoring and document previous exposure history. The information is used in the evaluation of risk of exposure to ionizing radiation or radioactive materials. The data permits meaningful comparison of both current (short-term) and long-term exposure to ionizing radiation or radioactive material. Data on your exposure to ionizing radiation or radioactive material is available to you upon request.

ROUTINE USES: The information may be used to provide data to other Federal agencies, academic institutions, and non-governmental agencies, such as the National Council on Radiation Protection and Measurement and the National Research Council, involved in monitoring/evaluating exposures of individuals to ionizing radiation or radioactive materials who are employed as radiation workers on a permanent or temporary basis and exposure received by monitored visitors. The information may also be disclosed to appropriate authorities in the event the information indicates a violation or potential violation of law and in the course of an administrative or judicial proceeding.

MANDATORY OR VOLUNTARY DISCLOSURE AND EFFECT ON INDIVIDUAL NOT PROVIDING INFORMATION: It is voluntary that you furnish the requested information, including social security number; however, the installation or activity must maintain a completed Automated Dosimetry Record (ADR) on each individual occupationally exposed to ionizing radiation or radioactive material as required by 10 CFR 20, 29 CFR 1910.96, and DA PAM 385-25. If information is not furnished, individual may not become a radiation worker. The social security number is used to assure that the Army/Agency has accurate identifier not subject to the coincidence of similar names or birthdates among the large number of persons on whom exposure data is maintained.

DD FORM 1952 (BACK), SEP 2011

Figure B–1. Sample DD Form 1952—continued

Appendix C

Guidance for DA Form 7689

C–1. Completion instructions for DA Form 7689

a. The RSO or bioassay specimen collector completes Part A. For additional guidance in completing Part A contact the analyzing laboratory.

b. The RSO completes Part B after the completion of the dosimetry assessment and forward to USADC along with the bioassay specimen data.

C–2. Additional guidance

See paragraph 13–9 for additional information concerning this form.

C–3. Requirements for completion of DA Form 7689

DA Form 7689 will be completed by the RSO or specimen collector whenever a bioassay specimen is collected. See figure C–1 and figure C–2 for an example of a DA Form 7689.

BIOASSAY INFORMATION SUMMARY SHEET (BISS)

For use of this form, see DA Pamphlet 385-25; the proponent agency is DAS.

PRIVACY ACT STATEMENT

DATA REQUIRED BY THE PRIVACY ACT OF 1974

AUTHORITY: 5 USC 301-Departmental Regulation: Purposes; 42 USC 2073, 2093, 2095, 2111, 2133, 2134, 2201(b), and 2201(o). The authority for soliciting the social security number is 10 CFR 20; 44 USC 3101-Record Management by Agency Heads, General Duties, and AR 385-10.

PRINCIPAL PURPOSE(S): To establish qualification of the internal dose from bioassay specimens. The internal dose will be added to deep dose equivalent to determine the total effective dose equivalent the individual has received annually. The total effective dose equivalent will be documented in the individual's exposure history. The information is used in the evaluation of risk of exposure to ionizing radiation or radioactive materials. The data permits meaningful comparison of both current (short-term) and long-term exposure to ionizing radiation or radioactive material. Data on your exposure to ionizing radiation or radioactive materials is available to you upon request.

ROUTINE USES: The information may be used to provide data to other Federal agencies, academic institutions, and non-governmental agencies, such as the National Council on Radiation Protection and Measurement and the National Research Council, involved in monitoring/evaluating exposures of individuals to ionizing radiation or radioactive materials who are employed as radiation workers on a permanent or temporary basis and exposure received by monitored visitors. The information may also be disclosed to appropriate authorities in the event the information indicates a violation or potential violation of law and in the course of an administrative or judicial proceeding.

MANDATORY OR VOLUNTARY DISCLOSURE AND EFFECT ON INDIVIDUAL NOT PROVIDING INFORMATION: It is voluntary that you furnish the requested information, including social security number; however, the installation or activity must maintain a completed Automated Dosimetry Record (ADR) on each individual occupationally exposed to ionizing radiation or radioactive material as required by 10 CFR 20, 29 CFR 1910.1096, and DA PAM 385-25. If information is not furnished, the individual may not become a radiation worker. The social security number is used to assure that the Army has an accurate identifier not subject to the coincidence of similar names or birthdates among the large number or persons on whom exposure data is maintained.

Bioassay Information Summary Sheet Completion Guidance:

Purpose: The Bioassay Information Summary Sheet must be completed when bioassay specimens are collected and when bioassay results are submitted to the USADC.

Completion Procedures:

Part A: The information will be used by the laboratory analyzing the data. The RSO or person responsible for collecting the specimen will fill out Part A. Check with the RSO or analyzing laboratory if there are question on how to properly fill out.

Part B: Once the dosimetry assessment is complete the RSO will fill in Part B. Generally, 10 CFR 20 requires a calculation only if an intake is greater than 10 percent of the ALI or exposure to more than 10 percent of the DAC. The uncertainty of the assessment is required and must be included as part of the results. The RSO will submit the Bioassay Information Summary Sheet along with the data of the bioassay specimen to the USADC. USADC will include the results into the individual's dose records as the committed effective dose equivalent (CEDE) which will be summed with the deep dose equivalent (DDE) for the total effective dose equivalent (TEDE).

PART A: Complete this section and submit with the bioassay specimen.

1. NAME *(Last, First, Middle)*	2. SOCIAL SECURITY NUMBER	3. DATE OF BIRTH *(YYYYMMDD)*
Last,First,Middle	XXX-XX-XXX	YYYYMMDD
4. DOSIMETRY ACCOUNT CODE	**5. NRC LICENSE OR ARA NUMBER**	
XYZ	XX-XXXXX-XX	

6. RSO NAME	7. EMAIL	8. TELEPHONE
As applicable	As applicable	(123)456-7890

9. REASON FOR BIOASSAY SPECIMEN COLLECTION	10. NUCLIDE
Routine	H-3

11. EXPOSURE DURATION	12. DATE/TIME OF EXPOSURE *(YYYYMMDD HH:MM)*	13. EXPOSURE PATHWAY
☐ ACUTE ☒ CHRONIC		☐ INHALATION ☐ INGESTION ☐ INJECTION ☐ WOUND ☐ OTHER *(describe)*

14. NUCLIDE CHEMICAL FORM	15. SPECIMEN COLLECTION DATE/TIME *(YYYYMMDD HH:MM)*
(IF KNOWN) CLASS OR TYPE ☐ D ☐ W ☐ Y ☐ F ☐ M ☐ S	START END

PART B: Complete this section after the dosimetry assessment is complete, then send to the U.S. Army Dosimetry Center.

16. DOSIMETRY MODELS USED	17. ESTIMATED INTAKE (microcurie)
☐ ICRP-26/30 ☐ ICRP-60/68	

18. ICRP-26/30 DOSE EQUIVALENTS OR ICRP-60/68 EQUIVALENT DOSES

ICRP-26/30 and ICRP-60/68			ICRP-60/68 ONLY		
ORGAN/TISSUE	**CODE**	**rem**	**ORGAN/TISSUE**	**CODE**	**rem**
GONADS	SZ		COLON	MZ	
BREAST	TZ		STOMACH	NZ	
LUNG	UZ		BLADDER	OZ	
RED BONE MARROW	VZ		LIVER	PZ	
BONE SURFACE	WZ		ESOPHAGUS	QZ	
THYROID	XZ		SKIN	RZ	
REMAINDER	YZ				
CEDE OR COMMITTED EFFECTIVE DOSE (ZZ)		rem			

19. APPROVED BY	DATE
DIGITAL SIGNATURE 123456789	YYYYMMDD

DA Form 7689, SEP 2012 APD LC v1.00ES

Figure C–1. Sample DA Form 7689—routine

BIOASSAY INFORMATION SUMMARY SHEET (BISS)

For use of this form, see DA Pamphlet 385-25; the proponent agency is DAS.

PRIVACY ACT STATEMENT

DATA REQUIRED BY THE PRIVACY ACT OF 1974

AUTHORITY: 5 USC 301-Departmental Regulation: Purposes; 42 USC 2073, 2093, 2095, 2111, 2133, 2134, 2201(b), and 2201(o). The authority for soliciting the social security number is 10 CFR 20; 44 USC 3101-Record Management by Agency Heads, General Duties, and AR 385-10.

PRINCIPAL PURPOSE(S): To establish qualification of the internal dose from bioassay specimens. The internal dose will be added to deep dose equivalent to determine the total effective dose equivalent the individual has received annually. The total effective dose equivalent will be documented in the individual's exposure history. The information is used in the evaluation of risk of exposure to ionizing radiation or radioactive materials. The data permits meaningful comparison of both current (short-term) and long-term exposure to ionizing radiation or radioactive material. Data on your exposure to ionizing radiation or radioactive materials is available to you upon request.

ROUTINE USES: The information may be used to provide data to other Federal agencies, academic institutions, and non-governmental agencies, such as the National Council on Radiation Protection and Measurement and the National Research Council, involved in monitoring/evaluating exposures of individuals to ionizing radiation or radioactive materials who are employed as radiation workers on a permanent or temporary basis and exposure received by monitored visitors. The information may also be disclosed to appropriate authorities in the event the information indicates a violation or potential violation of law and in the course of an administrative or judicial proceeding.

MANDATORY OR VOLUNTARY DISCLOSURE AND EFFECT ON INDIVIDUAL NOT PROVIDING INFORMATION: It is voluntary that you furnish the requested information, including social security number; however, the installation or activity must maintain a completed Automated Dosimetry Record (ADR) on each individual occupationally exposed to ionizing radiation or radioactive material as required by 10 CFR 20, 29 CFR 1910.1096, and DA PAM 385-25. If information is not furnished, the individual may not become a radiation worker. The social security number is used to assure that the Army has an accurate identifier not subject to the coincidence of similar names or birthdates among the large number or persons on whom exposure data is maintained.

Bioassay Information Summary Sheet Completion Guidance:

Purpose: The Bioassay Information Summary Sheet must be completed when bioassay specimens are collected and when bioassay results are submitted to the USADC.

Completion Procedures:

Part A: The information will be used by the laboratory analyzing the data. The RSO or person responsible for collecting the specimen will fill out Part A. Check with the RSO or analyzing laboratory if there are question on how to properly fill out.

Part B: Once the dosimetry assessment is complete the RSO will fill in Part B. Generally, 10 CFR 20 requires a calculation only if an intake is greater than 10 percent of the ALI or exposure to more than 10 percent of the DAC. The uncertainty of the assessment is required and must be included as part of the results. The RSO will submit the Bioassay Information Summary Sheet along with the data of the bioassay specimen to the USADC. USADC will include the results into the individual's dose records as the committed effective dose equivalent (CEDE) which will be summed with the deep dose equivalent (DDE) for the total effective dose equivalent (TEDE).

PART A: Complete this section and submit with the bioassay specimen.

1. NAME *(Last, First, Middle)*	2. SOCIAL SECURITY NUMBER	3. DATE OF BIRTH *(YYYYMMDD)*
Last, First, Middle	XXX-XX-XXX	YYYYMMDD
4. DOSIMETRY ACCOUNT CODE	**5. NRC LICENSE OR ARA NUMBER**	
XYZ	XX-XXXXX-XX	

6. RSO NAME	7. EMAIL	8. TELEPHONE
As applicable	As applicable	(123) 456-7890

9. REASON FOR BIOASSAY SPECIMEN COLLECTION	10. NUCLIDE
Routine	H-3

11. EXPOSURE DURATION	12. DATE/TIME OF EXPOSURE *(YYYYMMDD HH:MM)*	13. EXPOSURE PATHWAY
☒ ACUTE ☐ CHRONIC	YYYYMMDD HH:MM	☒ INHALATION ☐ INGESTION ☐ INJECTION ☐ WOUND ☐ OTHER *(describe)*

14. NUCLIDE CHEMICAL FORM (IF KNOWN) CLASS OR TYPE	15. SPECIMEN COLLECTION DATE/TIME *(YYYYMMDD HH:MM)*
Gas ☒ D ☐ W ☐ Y ☐ F ☐ M ☐ S	START YYYYMMDD HH:MM END YYYYMMDD HH:MM

PART B: Complete this section after the dosimetry assessment is complete, then send to the U.S. Army Dosimetry Center.

16. DOSIMETRY MODELS USED	17. ESTIMATED INTAKE (microcurie)
☐ ICRP-26/30 ☐ ICRP-60/68	

18. ICRP-26/30 DOSE EQUIVALENTS OR ICRP-60/68 EQUIVALENT DOSES

ICRP-26/30 and ICRP-60/68			ICRP-60/68 ONLY		
ORGAN/TISSUE	**CODE**	**rem**	**ORGAN/TISSUE**	**CODE**	**rem**
GONADS	SZ		COLON	MZ	
BREAST	TZ		STOMACH	NZ	
LUNG	UZ		BLADDER	OZ	
RED BONE MARROW	VZ		LIVER	PZ	
BONE SURFACE	WZ		ESOPHAGUS	QZ	
THYROID	XZ		SKIN	RZ	
REMAINDER	YZ				
CEDE OR COMMITTED EFFECTIVE DOSE (ZZ)		rem			

19. APPROVED BY	DATE
DIGITAL SIGNATURE 123456789	YYYYMMDD

DA Form 7689, SEP 2012 APD LC v1.00ES

Figure C–2. Sample DA Form 7689—exposure

Appendix D

Recommended Investigator Actions in the Event of a Reported Overexposure

D–1. Personnel overexposure actions

a. Use the following guidance to ensure that personnel overexposure actions are properly investigated (the RSO will consider this guidance whenever doses are higher than expected, at, or near overexposure levels).

(1) Ensure the RSO and the NRC licensee are provided with the initial notification of the optically stimulated luminescence doses listed in the ADR and, if applicable, the bioassay results. Most overexposure investigations will not involve bioassay results. For further guidance, contact the local RSO.

(2) Ensure all affected personnel and the local commander are notified of the overexposure results.

(3) Ensure the RSO is aware of the investigation requirements provided in AR 385–10.

(4) Ensure the RSO investigates the cause of the overexposure; any discrepancies in guidance, rules, protocol, measurements, and dosimetry results; and NRC noncompliance issues.

(5) Ensure the RSO documents the findings in the investigation report, which will be provided to the appropriate Army NRC licensee.

(6) The investigation report includes:

(a) The cause of the overexposure.

(b) Immediate corrective actions taken.

(c) Actions that will be taken to prevent recurrence and maintain the dosimetry program ALARA.

(d) The date when NRC compliance will be achieved, if applicable.

(e) Personnel data for each dosimetry wearer.

(f) A review of the dosimetry dose results and, if applicable, the bioassay results.

(g) Location of a dosimetry storage area.

(h) A review of the SOP on the dosimetry program with recommendations included.

(i) Verification of data associated with the RAM/RGD.

(j) Dosimetry wear/usage times.

(k) Statements from each dosimetry wearer.

(l) A review of the RADIAC used and procedures employed during radiological surveys.

(m) A determination as to whether the dose is actual, or if it is likely the dose to the dosimeter was not delivered appropriately to the individual.

(n) The methodology used to determine the administrative dose if used.

(7) Ensure all personnel dosimetry records are annotated properly.

(8) Ensure individuals are notified of the final dose assessment.

(9) Ensure the SOP is updated to include procedures that implement the corrective actions.

(10) Ensure personnel are retrained by the RSO on the RSP and, if changes are made to the SOP, then study the revised SOP to prevent a recurrence of the overexposure.

(11) Ensure the events and corrective actions are discussed during the next annual training event.

(12) Keep the NRC licensee involved in the process of implementing and completing the corrective actions by providing to him or her all pertinent information.

(13) Track all corrective actions to completion.

(14) Notify the local commander, RSO, command RSSO, and NRC licensee when each of the following is completed: the investigation report, corrective actions, and if applicable, when full NRC compliance is achieved.

b. For information on ALARA investigational levels, reportable dose criteria, investigations, and potential overexposure actions, see AR 385–10.

D–2. General

AR 385–10 provides notification, reporting requirements, and suspense guidance for investigational dose criteria.

Glossary of Terms

Accident
Any unplanned event or series of events that result in death, injury, or illness to personnel, or damage to or loss of equipment or property. (Within the context of this pamphlet, accident is synonymous with mishap.)

Active Army personnel
Members of the Army who are on full-time duty in active military service, including cadets at the U.S. Military Academy.

Aircraft
Free balloons, gliders, airships, and flying machines, whether manned or unmanned; a weight-carrying structure for navigation of the air that is supported by its own buoyancy or the dynamic action of the air against its surfaces.

Aircraft ground mishap
Damage or injury associated with an Army aircraft, both on land and afloat, even if no intent for flight exists or no engines are in operation. An exception exists for damage to an Army aircraft only when handled as a commodity or cargo.

Ammunition and explosives
Includes, but is not limited to, all items of ammunition, propellants (liquid and solid), high and low explosives, guided missiles, warheads, devices, pyrotechnics, chemical munitions, and components and substances associated therewith, presenting real or potential hazards to life and property.

Annual basis or annually
From the month of the current year to the same month of the following year. However, the time will not exceed 13 months. This does not apply to items covered under the Army Maintenance Management System.

Army leadership
Army officers, NCOs, senior executive service (SES) officials, and general schedule (GS or GM) employees designated, authorized, and held responsible and accountable by the U.S. Army to make decisions at various levels of the U.S. Army involving execution of the Army's mission. Designation must be documented in writing or contained in official orders.

Army mishap
An unplanned event, or series of events, which results in one or more of the following:
a. Occupational illness to Army military or DA Civilian personnel.
b. Injury to on-duty DA Civilian personnel.
c. Injury to Army military personnel on and off duty.
d. Damage to Army property.
e. Damage to public or private property and/or injury or illness to non-Army personnel caused by Army operations (the U.S. Army had a causal or contributing role in the mishap).

Army motor vehicle
Any vehicle that is owned, leased, or rented by DA and/or Reserve Components. A vehicle that is primarily designed for over-the-road operation. A vehicle whose general purpose is the transportation of cargo or personnel. Examples are passenger cars, station wagons, trucks, ambulances, buses, motorcycles, fire trucks, and refueling vehicles.

Army National Guard personnel
Military personnel who are on active duty for training, inactive duty training, annual training, active duty special work, temporary tour active duty, Active Guard Reserve, or full-time manning.

Army personnel
Active duty Army personnel, DA Civilian personnel, U.S. Army Reserve (USAR) personnel, ARNG personnel, and Reserve Officers' Training Corps personnel as defined in this regulation.

Army property
Any item of Army property, or property leased by the U.S. Army, for which the U.S. Army has assumed risk of loss, such as aircraft, vehicle, building, structure, system, and so on.

Army risk management process
A holistic approach to preserving readiness that applies 24 hours a day, 7 days a week to Soldiers, DA Civilians, and contract workers. The process has five phases that form a closed loop system of RM, mitigation, and evaluation.

Army Safety and Occupational Health Management System capability objectives
The criteria of the ASOHMS that serves as the framework in which every DA organization executes its SOH programs.
a. Capability objectives are used to integrate ASOHMS criteria into manageable and related sets of Army SOH requirements.
b. Capability objectives are used to organize identified gaps and develop strategic action plans to help Army organizations incrementally implement a safety management system through a three-stage approach of process, execution, then improvement (the Plan-Do-Check-Act).
c. Capability objectives are designed to fully integrate risk-based, mission-focused written programs, policies, tactics, techniques, and procedures into daily activities to enhance readiness by reducing preventable injuries and illnesses, proactively assessing risk, implementing control measures, and trending and measurement. The end state will support the documentation, refinement, and validation of nonmateriel and materiel changes needed to achieve required capabilities and result in sustained program performance and continuing improvements to protect our greatest asset, our people.

Audit
A process of collecting information about an organization's SOH management system and making judgments about its adequacy and performance, identifying both the strengths and weaknesses of the safety and health program as implemented by the organization. To ensure that all necessary safety and health program elements are operating and that procedures are in place for thorough implementation. The aims of auditing should be to establish that appropriate management arrangements are in place, an adequate RM control system exists which reflects the hazard profile of the organization and is properly implemented, and appropriate workplace precautions are in place.

Barrier
A permanent or temporary impediment to foot and/or vehicular traffic that personnel are prohibited to pass without approval from range control. A barrier may be sentinel, wire fencing, gate, sign, or other access-limiting device.

Business plan
A comprehensive document that clearly describes how the safety office intends to obtain their strategic goals and objectives. It describes how they will execute their programs and processes, manage funding and manpower, and interface with other organizations to achieve those goals.

Chemical agent
A chemical compound intended for use (to include experimental compounds) in military operations to kill, seriously injure, or incapacitate persons through its physiological effects. Excluded are research, development, test, and evaluation solutions, riot control agents, chemical defoliants and herbicides, smoke, flame and incendiaries, and industrial chemicals.

Chemical agent operation
Any activity that involves DoD chemical agents, including storage, shipping, handling, manufacturing, maintenance, test chamber activities, laboratory activities, surveillance, demilitarization, decontamination, disposal, and training.

Chemical ammunition
Ammunition, the filler of which has the basic function of producing a toxic or irritant effect on the body, a screening or signaling smoke, or an incendiary action.

Chemical event
All chemical mishaps, incidents, and politically/publicly sensitive occurrences (also see AR 50–6). Specifically, this applies to:
a. Confirmed releases of agent from munitions. A confirmed chemical agent release from stockpile or nonstockpile chemical weapons is any detection of agent outside the munitions body or bulk storage container into the atmosphere, outside of a closed containment system, that is confirmed by corroborating

positive detections. Closed containment systems include filtered bunkers, igloos, or over-pack containers that are capable of preventing the escape of chemical agent in concentrations exceeding the adverse effect level. Reporting should begin based on the time of release confirmation and should not wait until location and isolation of the leaking munitions/container is accomplished.
b. Discovery of an actual or suspected chemical agent munitions or container that may require emergency transportation and/or disposal. Discovery as part of planned real property remediation should not be reported as a chemical event unless emergency transportation or disposal is required, but it should be reported in accordance with remediation plans.
c. Confirmed detection of agent above short-term exposure limit (STEL) occurring for any period outside the primary engineering control. This includes agent operations conducted in a closed system that is contained in a facility equipped with secondary engineering controls to protect unprotected workers or the ambient environment (for example, cascade ventilation/air filtrations).
d. Actual exposure of personnel to agent above the STEL that is confirmed by clinical evaluation or initial laboratory evaluation or documented by sampling techniques. This includes any case where there is a reasonable belief that an exposure has occurred to any individual above these limits. Special attention needs to be given to workers reporting that they believe they were exposed to agent or the failure of PPE.
e. Any terrorist or criminal act directed toward chemical agent storage, laboratory, or demilitarization facility or any deliberate release of chemical agent. This includes employment of an improvised chemical device intended to disperse chemical agent, regardless of whether the device has functioned.
f. Loss of chemical agent (other than deliberate destruction by approved, authorized laboratory and demilitarization processes).
g. Any malfunction or other significant activity at a chemical demilitarization plant that could reasonably be expected to cause concern within the local community or the press, or that, in the judgment of the facility or installation management or leadership, could cause embarrassment to the Army.
h. The categories above that involve items configured as weapons containing the industrial chemical chlorine, hydrogen, and potassium cyanide, carbonyl chloride, cyanogen chloride, or chloropicrin. This pertains to items that were designed as a delivery/dispersal system for use in war, irrespective of fusing or explosive configuration.

Chemical munitions and agents
An agent or munitions that, through its chemical properties, produces lethal or other damaging effects to human beings; this term does not include riot control agents, chemical herbicides, smoke, and other obscuration materials.

Chemical warfare
All aspects of military operations involving the use of lethal munitions/agents and the warning and protective measures associated with such offensive operations.

Chemical weapons system
An integrated relationship of chemical agents, munitions, or spraying devices, and their mode of delivery to the target.

Combat developer
Command or agency that formulates doctrine, concepts, organization, training, materiel requirements, and objectives. Represents the user community over the lifecycle of the system.

Command responsibility
The philosophy that commanders down the entire chain of command are responsible for the safety of their personnel.

Commander
An individual that lawfully exercises leadership authority over subordinates by virtue of rank or assignment. This includes the authority and responsibility for effectively using available resources for planning the employment of, organizing, directing, coordinating, and controlling military forces for the accomplishment of assigned missions. This also includes responsibility for health, welfare, morale, and discipline of assigned personnel in his or her "command," according to FM 1–02.1 and ADP 6–0. Examples of commanders are as follows:
a. Commanders of ACOMs, ASCCs, and DRUs (continental United States and OCONUS) and DARNG.
b. Chief of Engineers (civil and military works).

c. Commander, U.S. Army Space and Strategic Defense Command.
d. Chief, National Guard Bureau.
e. Commander, U.S. Army Medical Research and Development Command.
f. Commanders of Army installations with a full-time safety professional. This includes posts, camps, stations, and military communities.
g. State adjutants general (ARNG).
h. Commanders of USAR organizations with a full-time safety professional.
i. Commanders of MTFs.
j. Commanders in direct support of general support maintenance units.
k. Director of facilities engineering.
l. Provost marshal/law enforcement commander.
m. Directors of industrial operations.
n. U.S. Army plant representative office.
o. Commanders of modified table of organization and equipment or table of distribution and allowance organizations.

Competent authority
An individual of the Armed Forces designated in command, responsible for the direction, coordination, and control of military forces. The commander alone is responsible for everything his or her unit does or fails to do. He or she cannot delegate responsibility or any part of it although he or she may delegate portions of his or her authority to competent individuals. An individual designated by the commander to address areas of primary interest within that individual's technical expertise.

Concentration
The amount of a chemical agent present in a unit volume of air. Usually expressed in milligrams per cubic meter (mg/m3).

Confirmed exposure
Any mishap with a biological program agent in which there was direct evidence of an actual exposure such as a measurable rise in antibody titer to the agent or a confirmed diagnosis of intoxication or disease.

Conservation
The protection, improvement, and use of natural resources according to principles that will provide optimum public benefit and support of military operations.

Contracting agency
The organization that has primary responsibility for monitoring, administering, and ensuring compliance with the contract, especially pertaining to the chemical agent program.

Contracting officer
A designated officer who performs administrative functions listed in the FAR.

Contractor mishap
Any mishap that occurs as a result of a government contractor's operations in which there is damage to U.S. Government or Army property or equipment, injury or occupational illness to Army personnel, or other reportable event.

Control
Action taken to eliminate hazards or reduce their risk.

Conveyance
A truck, tractor-trailer, railcar, or commercial intermodal container used for transportation of ammunition, explosives, or hazardous materials.

Counseling/advisory
Activities associated with nonsupervisory advice/assistance provided by subject matter specialists on specific topics, for example, alcohol/drug abuse, mental health, community services.

Decontaminating material
Any substance used to chemically destroy, physically remove, seal, or otherwise make harmless a chemical agent.

Decontamination
The physical or chemical processes by which an object or area, contaminated with a harmful or potentially harmful substance (for example, chemical agent, explosives, etiologic agent, hazardous chemical, and so forth) is made safe for handling or use. Such processes include physical removal of all contaminants, thermal destruction of sterilization, chemical inactivation or a combination of these methods.

Demilitarization
The mutilation, destruction, or neutralization of chemical agent materiel, rendering it harmless and ineffectual for military purposes.

Department of the Army Civilian personnel
Includes SES, GS or GM, and federal wage system personnel employed by the U.S. Army, Corps of Engineer Civil Works employees, nonappropriated fund employees (excluding part-time military), foreign nationals directly or indirectly employed by the U.S. Army (paid by appropriated funds), ARNG and Reserve Component technicians (unless in a military duty status) and non-dual status technicians, and Youth or Student Assistance Program employees.

Department of the Army contractor
A nonfederal employer engaged in performance of a DA contract, whether as prime contractor or subcontractor.

Department of the Army installation
A grouping of facilities located in the same vicinity that supports a particular DA functions. Installations may include locations such as posts, camps, stations, or communities, land, and improvements permanently affixed thereto which are under the DA control and used by Army organizations. Where installations are located contiguously, the combined property is designated as one installation and the separate functions as activities of that installation. In addition to those used primarily by troops, the term “installation” applies to such real properties as depots, arsenals, ammunition plants (both contractor- and government-operated), hospitals, terminals, and other special mission installations.

Detection
The determination of the presence of a hazardous (chemical, radiological, or biological) agent.

Educational
Includes classroom training, excludes field settings such as field training exercises and maneuvers (for example, teach, instruct, brief, or counsel student or audience activities).

Emergency
An event for which an individual perceives that a response is essential to prevent or reduce injury or property damage.

Emergency disposal
Immediate transportation and disposal of chemical agents/munitions when the senior EOD person determines the health or safety of any person is clearly endangered.

Engineering controls
Regulation of facility operations using prudent engineering principles such as facility design, operation sequencing, equipment selection, and process limitations.

Engineering or construction
Those activities associated with surveying, building, and erecting, dissembling, or destroying things. Examples include lay/clear minefields, bridging, quarrying, welding, brazing, roofing, installing electrical wiring, painting, land surveying, demolition, clearing, digging, concrete work, masonry work, dredging, and trenching.

Environmental factors
Environmental conditions which had, or could have had, an adverse effect on the individual’s actions or the performance of equipment.

Establishment
A single physical location where business is conducted or where services or operations are performed. Where distinctly separate activities are performed at a single physical location, each activity will be

treated as a separate establishment. Typically, an establishment refers to a field activity, regional office, area office, installation, or facility.

Evaluation
A specialized inspection designed to determine the effectiveness of a unit's safety and health program.

Exclusive federal jurisdiction
Also known as exclusive legislative jurisdiction. Applies to situations where the Federal Government has received, by whatever method, all the authority of the state, with no reservation made to the state, except of the right to serve process resulting from activities that occurred off the land involved.

Experimental chemical agents
Chemical substances being tested, developed, or altered for chemical defense purposes that are used solely by the military, are contained in items configured as a weapon, and have toxicities equal to or greater than current nerve or mustard agents.

Explosion
A chemical reaction of any chemical compound or mechanical mixture that, when initiated, undergoes a very rapid combustion or decomposition, releasing large volumes of highly heated gases that exert pressure on the surrounding medium. Depending on the rate of energy release, an explosion can be categorized as a deflagration or a detonation.

Explosive license
An installation-generated document which shows the allowable net explosives weight at each explosive site.

Explosive ordnance disposal
The detection, identification, field evaluation, rendering-safe, recovery, and final disposal of unexploded ordnance (UXO). It may also include the rendering safe or disposal of explosive ordnance that have become hazardous by damage or deterioration when the disposal of such explosive ordnance is beyond the capabilities of personnel normally assigned the responsibility for routine disposal. In this case, this includes applicable weapon systems, all munitions, all similar or related items, or components explosive, energetic, or hazardous in nature. This includes explosive ordnance training aids and items, items that could be misidentified as explosive ordnance or bombs, remotely piloted vehicles, and Army aircraft and vehicles. The detection, identification, field evaluations, rendering safe, recovery, and final disposal of UXO or munitions chemical agents.

Explosive ordnance disposal procedures
Those particular courses or modes of action for access to, recovery, render safe, and final disposal of explosive ordnance or any hazardous materials associated with an EOD incident.

Exposed site
A location exposed to the potential hazardous effects (blast, fragments, debris, and heat flux) from an explosion at a potential explosion site.

Exposure
The frequency and length of time personnel and equipment are subjected to a hazard. Ionizing radiation may be either produced from machines (for example, x-ray machines and accelerators) or spontaneously emitted by RAM. An individual located near such machines or materials may be "exposed" to possible ionizing radiation emissions and sustain an exposure.

Extremely hazardous substances
Terms used by EPA for the chemicals that must be reported to the appropriate authorities if released above the threshold reporting quantity. Each substance has a threshold reporting quantity. The list of extremely hazardous substances is identified in Title III of the Superfund Amendments and Reauthorization Act of 1986 (see 40 CFR 355).

Facility
A structure that is built, installed, or established to serve a defined purpose. An area within a building that provides appropriate protective barriers for persons working in the facility, the environment external to the facility, and outside of the building.

Federal Occupational Safety and Health Administration official
Investigator or compliance officer employed by, assigned to, or under contract to OSHA.

Field operations
Operations conducted outdoors or outside of manmade enclosures or structures that contain built-in alarms or engineered chemical agent controls. Short-term operations in storage structures are also considered field operations.

First aid
First aid is defined as using a list of procedures that are all-inclusive and is not a recordable injury. If a procedure is not on the list, it is not considered first aid for recordkeeping purposes. The following are the procedures contained in the list:
a. Using a nonprescription medication at nonprescription strength. However, if an employee is provided prescription medications or nonprescription medications at prescription strength, this is considered medical treatment.
b. Tetanus immunizations.
c. Cleaning, flushing, or soaking surface wounds.
d. Wound coverings, butterfly bandages, or Steri strips. The use of wound closure methods such as sutures, medical glues, or staples is considered medical treatment.
e. Hot or cold therapy regardless of how many times it is used.
f. Nonrigid means of support.
g. Temporary immobilization device used to transport mishap victims.
h. Drilling of fingernail or toenail; draining fluid from blister.
i. Eye patches.
j. Removing foreign bodies from eye using irrigation or cotton swab. However, use of other methods to remove materials from the eye is medical treatment.
k. Removing splinters or foreign material from areas other than the eye by irrigation, tweezers, cotton swabs, or other simple means.
l. Finger guards.
m. Massages. Massage therapy is first aid, but physical therapy or chiropractic treatment is considered medical treatment.
n. Drinking fluids for relief of heat stress. (Drinking fluids for relief of heat stress is first aid, but administering an intravenous line is medical treatment.)

Flammable
A material that has the characteristic of being easily ignited and burning readily.

Foreign object damage
Damage to Army vehicle/equipment/property as a result of objects alien to the vehicle/equipment damaged. Excludes aircraft turbine engines defined as an FOD incident.

Fragment
A piece of an exploding or exploded munitions. Fragments may be complete items, subassemblies, pieces thereof, or pieces of equipment or buildings containing the items.

Fragment distance
The limiting range, based on a specific density of hazardous fragments, expected from the type and quantity of explosives involved. Used in establishing certain quantity distance criteria. A hazardous fragment is a fragment having an impact energy of 58 foot-pounds or greater. Hazardous fragment density is a density of hazardous fragments exceeding one per 600 square feet.

Full-time manning
Temporary tour active duty.

Ground mishap
Any mishap exclusive of aviation (flight/flight related/aircraft ground/ unmanned aircraft system). For example, mishaps involving motor vehicles, maritime, weapons/explosives, sports and recreation, and so forth.

Handling/material/passengers
Activities associated with the transportation, distribution, and storage of material or passengers (for example, distribute/issue, load/unload, transport/move/deliver, pack/unpack/preserve, inventory/inspect, weigh/measure, palletize/sling load/rig, retrieve, or turn in/store).

Hazard
Any actual or potential condition that can cause injury, illness, or death of personnel or damage to or loss of equipment, property or mission degradation, or a condition or activity with potential to cause damage, loss, or mission degradation.

Hazard analysis
A hazard analysis is a clear, systemic, concise, well-defined, orderly, consistent, closed loop, quantitative or qualitative, and objective methodology used to identify possible hazards within a mission, system, equipment, or process that can cause losses to the mission, equipment, process, personnel, or damage to the environment. Examples of hazard analyses are what-if, preliminary hazard analysis, sneak circuit analysis, hazard and operability study, fault tree analysis, failure mode and effects analysis, and fault hazard analysis.

Hazard class
The United Nations Organization hazardous classification system, which contains nine hazard classes, is used by the DoD for dangerous materials to identify the hazardous characteristics of AE. Hazard class 1 (AE) is further divided into six division designators that indicate the primary characteristics and associated hazards.

Hazard classification
An assignment of AE (class 1 substances) into one of six divisions for purposes of storage, transportation, and quantity distance computations. These divisions are:
a. 1.1–mass detonating.
b. 1.2–fragment producing.
c. 1.3–mass fire.
d. 1.4–moderate fire.
e. 1.5–very insensitive explosives and blasting agent (used by the U.S. Army for transportation only).
f. 1.6–extremely insensitive ammunition.

Hazardous chemicals
Per OSHA, denotes any chemical that would be a risk to employees if exposed in the work place. Hazardous chemicals cover a broader group of chemicals than the other chemical lists.

Hazardous materials
a. Any material that has been designated as hazardous under 49 USC Chapter 51 and is required to be placarded under 49 CFR 172 Subpart F or any quantity of material listed as a select agent or toxin in 42 CFR 73.
b. Substances that have hazardous characteristics such as flammable, corrosive, reactive, toxic, radioactive, poisonous, carcinogenic, or infectious and having properties capable of producing adverse effects on the health and safety or the environment of a human being. Legal definitions are found in individual regulations.
c. Defined by the Federal Emergency Management Agency as any substance or material that when involved in a mishap and released in sufficient quantities poses a risk to people's health, safety, and/or property. These substances and materials include explosives, RAMs, flammable liquids or solids, combustible liquids or solids, poisons, oxidizers, toxins, and corrosive materials.
d. Used by DOT to cover eight hazard classes, some of which have subcategories called classifications and a ninth class covering other regulated materials. The DOT includes in its regulations hazardous substances and hazardous wastes as other regulated materials-E, both of which are regulated by the EPA, if their inherent properties would not otherwise be covered.

Hazardous substances
a. EPA uses the term hazardous substance for the chemicals that, if released into the environment above a certain amount, must be reported and depending on the threat to the environment, federal involvement in handling the incident can be authorized. A list of the hazardous substances is published in 40 CFR 302.

b. OSHA uses the term hazardous substance in 29 CFR 1910.120, which resulted from Title I of the Superfund Amendments and Reauthorization Act of 1986 and covers emergency response. OSHA uses the term differently than EPA. Hazardous substances, as used by OSHA, cover every chemical regulated by both DOT and EPA.

Hazardous wastes
Per EPA, chemicals that are regulated under 42 USC 6901 et seq., also known as the Resource Conservation and Recovery Act. Hazardous waste in transportation is regulated by DOT.

Health hazard
An existing or likely condition, inherent to the operation, maintenance, storage, or disposal of materiel or a facility, that can cause death, injury, acute or chronic illness, disability, or reduced job performance.

Health hazard assessment
The Army's formal process used to identify, control, or eliminate health hazards associated with the development and acquisition of new materiel. Health hazard categories addressed by the health hazard assessment program include, but are not limited to, acoustic energy, biological and chemical substances, oxygen deficiency, ionizing and nonionizing radiation, shock, temperature, trauma, vibration, and ultrasound. (See AR 40–10.)

Hospitalization
Admission to an MTF as an inpatient for medical treatment.

Human error
Human performance that deviated from that required by the operational standards or situation. Human error in mishaps can be attributed to a system inadequacy/root cause in training, standard, leader, individual, or support failure indicated by human factors and/or human factors engineering.

Human factors
Human interactions (man, machine, and/or environment) in a sequence of events that were influenced by, or the lack of, human activity which resulted or could result in an Army mishap.

Human factors engineering
A comprehensive technical effort to integrate into Army doctrine, materiel development, and materiel acquisition (to ensure operational effectiveness) all relevant information on human characteristics (skill capabilities); performance (anthropometric data); biomedical factors (safety factors); and training (manning implications).

Imminent danger
Conditions or practices in any workplace that pose a danger that reasonably could be expected to cause death or severe physical hardship before the imminence of such danger could be eliminated through normal procedures.

Improved conventional munitions
Munitions characterized by the delivery of two or more antipersonnel, antimateriel, and/or anti-armor submunitions.

Independent evaluation
The process used by evaluators to independently determine if the system satisfies the approved requirements. It will render an assessment of data from all sources, simulation and modeling, and an engineering or operational analysis to evaluate the adequacy and capability of the system.

Independent safety assessment
An independent assessment of a specific system safety issue, provided by the DASAF, for resolution by the appropriate RM decision authority.

Individual risk
Risk to a single exposed person.

Industrial chemical
Chemicals developed or manufactured for use in industrial operations or research by industry, government, or academia. Man does not primarily manufacture these chemicals for the specific purpose of producing human casualties or rendering equipment, facilities, or areas dangerous for use.

Industrial operations
Activities that contribute to the development, testing, procurement, deployment, and logistical support of Army equipment and weapon systems. (For example, facility engineer operations, motor pools, Army laboratories, storage facilities, equipment and maintenance, airfield operations, range support operations, testing, and so forth.)

Inherent hazard
An existing or permanent hazard (such as voltage).

Injury
A traumatic wound or other condition of the body caused by external force, including stress or strain. The injury is identifiable as to time and place of occurrence and member or function of the body affected, and is caused by a specific event, incident, or series of events or incidents within a single day or workshift.

Inspection
Comprehensive survey of all or part of a workplace in order to detect safety and health hazards. Inspections are normally performed during the regular work hours of the agency, except as special circumstances may require. Inspections do not include routine, day-to-day visits by agency SOH personnel or routine workplace surveillance (see 29 CFR 1960.2). It is also the process of determining compliance with safety and health standards through formal and informal surveys of workplaces, operations, and facilities.

Installation
An aggregation of contiguous, or near contiguous, common mission-supporting real property holdings under the jurisdiction of or possession controlled by the DA or by a state, commonwealth, territory, or the District of Columbia and at which an Army unit or activity (Active Reserve, Army Reserve, or ARNG) is assigned.

Installation-level safety director
The senior full-time safety professional responsible for providing safety support to Army installations, including camps, stations, military communities, and USAR organizations.

Investigation
A systematic study of a mishap, incident, injury, or occupational illness circumstances.

Laboratory
An individual room or rooms within a facility that provide space in which work with etiologic or chemical agents may be performed. It contains appropriate engineering features and equipment required for either a given biosafety level or chemical agent to protect personnel working in the laboratory and the environment and personnel outside of the laboratory.

Laser
Light amplification by stimulated emission of radiation; a device that produces an intense, coherent, directional beam of light by stimulating electronic or molecular transitions to higher energy levels. Lasers are classified by the degree of potential hazard (see 21 CFR 1040.10, ANSI Z136.1, for comprehensive definitions of laser hazard classes and TB MED 524 and JP 3–09 for more information on lasers.)

Lifecycle
The life of a system from conception to disposal.

Maintenance/repair/servicing
Activities associated with the maintenance, repair, or servicing of equipment and other property. Excludes janitorial, housekeeping, or groundskeeping activities. Examples include install/remove/modify equipment, tune/adjust/align/connect, hot-metal work, cold-metal work, plastic working, soldering, repairing tires, inspecting tires/batteries, fueling/defueling, changing/inflating tires, and charging batteries.

Malfunction
Failure of an ammunition item to function as expected when fired, launched, or when explosive items function under conditions that should not cause functioning. Malfunctions include hang-fires, misfires, duds, abnormal functioning, and premature functioning of explosive items under normal handling, maintenance, storage, transportation, and tactical deployment. Malfunctions do not include mishaps or incidents that arise solely from negligence, all practice, or situations such as vehicle mishaps or fires.

Materiel developer
Command or agency responsible for the functional support for the research, development, and acquisition process. The research, development, and acquisition command, agency, or office assigned responsibility for the system under development or being acquired. The term may be used generically to refer to the research, development, and acquisition community in the materiel acquisition process (counterpart to the generic use of capability developer).

Materiel factors
When materiel elements become inadequate or counterproductive to the operation of the vehicle/equipment/system.

Medical surveillance
A program composed of preplacement, job transfer, periodic, and termination examinations that are provided to all personnel potentially exposed to chemical agent health hazards in the work environment.

Medical treatment
The management and care of a patient to combat disease or disorder. It does not include visits to a physician or licensed health care professional solely for observation or counseling, diagnostic procedures, or first aid.

Military personnel
All Soldiers; that is, U.S. Army active duty personnel; USAR or ARNG personnel on active duty or full-time National Guard duty or in a paid drill status; Service Academy midshipmen/cadets; Reserve Officers' Training Corps cadets when engaged in directed training activities; foreign national military personnel assigned to DA; and members of other U.S. uniformed services assigned to DA.

Military-unique equipment, systems, and operations
Excludes from the scope of 29 CFR 1960 the design of DoD equipment and systems that are unique to the national defense mission, such as military aircraft, ships, submarines, missiles, and missile sites; early warning systems; military space systems; artillery; tanks; and tactical vehicles. Also excludes operations that are uniquely military such as field maneuvers, naval operations, military flight operations, associated research test and development activities, and actions required under emergency conditions. The term includes within the scope of the order DoD workplaces and operations comparable to those of industry in the private sector such as vessel, aircraft, and vehicle repair, overhaul, and modification (except for equipment trials); construction; supply services; civil engineering or public works; medical services; and office work.

Mishap
Any unplanned event or series of events that results in death, injury, or illness to personnel, or damage to or loss of equipment or property. (Within the context of this pamphlet, mishap is synonymous with accident.)

Mishap risk management
A component of RM used to identify, evaluate, manage, and prevent mishaps to personnel, equipment, and the environment during peacetime, contingency operations, and wartime due to SOH factors, design and construction of equipment, and other mishap factors.

Mission
Flight or series of flights (sorties) conducted to accomplish a specific task or series of tasks in support of the unit's approved mission statement. Each mission is assigned to a designated pilot in command and/or air mission commander.

Monitoring
The continued or periodic act of seeking to determine whether a chemical agent is present. Also known as radiation monitoring or radiation protection monitoring. Monitoring is measurement of radiation levels, concentrations, surface area concentrations, or quantities of RAM. Monitoring can also mean the use of data to evaluate or document actual or potential personnel occupational exposures to ionizing radiation sources or devices.

Munitions and explosives of concern
Distinguishes specific categories of military munitions that may pose unique explosives safety risks; UXO, as defined in 10 USC 101(e)(5)(A) through (C), discarded military munitions as defined in 10 USC

2710(e)(2), or munitions constituents (for example, trinitrotoluene (TNT), research department explosive) present in high enough concentrations to pose an explosive hazard.

Munitions response
Response actions, including investigation, removal actions, and remedial actions to address the explosives safety, human health, or environmental risks presented by UXO, discarded military munitions, or munitions constituents.

Near miss
A potentially serious mishap or incident that could have resulted in personal injury, death, or property damage, damage to the environment, and/or illness but did not occur due to one or more factors.

Neutralization
The act of altering the chemical, physical, and toxicological properties to render the chemical agent ineffective for use as intended.

Nonappropriated fund employees
Employees paid from nonappropriated funds, including summer and winter hires and special nonappropriated fund program employees. Military personnel working part-time in nonappropriated employment are excluded.

Non-Department of Defense component
Any entity (government, private, or corporate) that is not a part of DoD.

Nuclear weapon
A device in which the explosion results from the energy released by reactions involving atomic nuclei, either fission, fusion, or both. For the purpose of this regulation, nuclear components of weapons are also included.

Occupational hazard
Conditions, procedures, and practices directly related to the work environment that creates a potential for producing occupational injuries or illnesses.

Occupational illness
Nontraumatic physiological harm or loss of capacity produced by systemic infection or continued or repeated stress or strain (for example, exposure to toxins, poisons, or fumes or other continued and repeated exposures to conditions of the work environment over a long period of time). Includes any abnormal physical or psychological condition or disorder resulting from an injury, caused by long- or short-term exposure to chemical, biological, or physical agents associated with the occupational environment. For practical purposes, an occupational illness is any reported condition that does not meet the definition of an injury.

Occupational injury
A wound or other condition of the body caused by external force, including stress or strain. The injury is identifiable as to time and place of the occurrence and a member or function of the body affected and is caused by a specific event, incident, or series of events or incidents within a single day or workshift.

Off duty
Army personnel are off duty when they—
a. Are not in an on-duty status, whether on or off Army installations.
b. Have departed official duty station, TDY station, or ship at termination of normal work schedule.
c. Are on leave and/or liberty.
d. Are traveling before and after official duties, such as driving to and from work.
e. Are participating in voluntary and/or installation team sports.
f. Are on permissive (no cost to U.S. Government other than pay) TDY.
g. Are on lunch or other rest break engaged in activities unrelated to eating or resting.

Officer in charge
The officer, warrant officer, or NCO responsible for personnel conducting firing or operations within the training complex.

On duty
Army personnel are considered on duty for purposes of mishaps when they are—

a. Physically present at any location where they are to perform their officially assigned work. (This includes those activities incident to normal work activities that occur on Army installations, such as lunch, coffee, or rest breaks and all activities aboard vessels.)
b. Being transported by DoD or commercial conveyance in order to perform officially assigned work (this includes reimbursable travel in POVs for performing TDY but not for routine travel to and from work).
c. Participating in compulsory physical training activities (including compulsory sports) or other installation events.

Operating vehicle or vessel
Activities associated with operating vehicles or vessels under power. Examples include driving, convoying/road marching, towing/pushing, mowing, hauling/transporting, driver testing, flying, and vehicle road testing.

Operational control
The authority to perform those functions of command over subordinate forces involving organizing and employing command and forces, assigning tasks, designating objectives, and giving authoritative direction necessary to accomplish the mission. Operational control includes authoritative direction over all aspects of military operations and Joint training necessary to accomplish missions assigned to the command. It does not, in and of itself, include authoritative direction for logistics or matters of administration, discipline, internal organization, or unit training.

Over-the-road
Operation or driving on paved roads/highways.

Physical training
Body conditioning or confidence building activities; excludes combat skills development. Examples include confidence courses, combat football, combat basketball, push-ball, marches, calisthenics, pugil stick, running/jogging, and physical training test.

Probability
The qualitative or quantitative likelihood of a particular event or sequence of actions initiated by a hazard-related cause resulting in the maximum credible loss. Probability can be expressed as the product of the incident rate and mishap set likelihood.

Project-product manager
Individual chartered to conduct business on behalf of the Army who reports to and receives direction from either a professional employer organization, the affirmative action employer, or other materiel developer and is responsible for the centralized management of a specified acquisition program.

Prophylaxis
Measures designed to preserve health.

Qualified safety and health personnel
Includes persons who meet Office of Personnel Management standards for safety and occupational health manager/specialist, GS–0018 and safety engineer, GS/GM–0803. Other job specialties should provide support in their respective specialty areas (for example, safety engineering technician, GS–0802; safety technician, GS–0019; aviation safety officer, GS–1825; air safety investigating officer, GS–1815; fire protection engineer, GS–0804; fire protection specialist/marshal, GS–0081; medical officer, GS–0602; health physicist, GS–1306; industrial hygienist, GS–0690; occupational health nurse, GS–0610; environmental health technician, GS–0699; or other personnel determined to be equally qualified as compared to these Office of Personnel Management standards).

Quality assurance specialist (ammunition surveillance)
DA Civilian personnel in the grade of GS–09 or above who have received 2 years of ammunition training and are qualified to assist in performing malfunction investigations.

Quantity distance
The quantity of explosives material and distance separation relationships that provide defined types of protection.

Recommendations
Those actions advocated to the command to correct system inadequacies that caused, contributed, or could cause or contribute to an Army mishap. Also referred to in this regulation as corrective action, remedial measures, and/or countermeasures.

Recordable mishap
Reportable mishap that meets the minimum criteria stated AR 385–10 for aviation and ground class A through D mishaps.

Residual hazards
Hazards that are not eliminated by design.

Restricted area
Any area, usually fenced, at an establishment where the entrance and egress of personnel and vehicular traffic are controlled for reasons of safety and/or security.

Restricted work activity
Individual's injury is such that they are unable to perform their normal duties (for example, light duty).

Risk
Directly related to the ignorance or uncertainty of the consequences of any proposed action. Risk is an expression of possible loss in terms of hazard severity and hazard probability. Risk is the expected value of loss associated with a loss caused by a hazard expressed in dollars. The risk associated with this loss is mathematically derived by multiplying the probability of the loss's likelihood of occurrence by the probable dollar loss associated with the loss's severity. Note that risk has two dimensions, likelihood and magnitude, while a hazard has only one-varied magnitude.

Risk acceptability
That level of risk determined as tolerable in order to fulfill mission requirements. It represents a level of risk where either the output of resources to rectify safety deficiencies does not result in a proportional increase in the level of safety be provided or so restricts the performance that the assigned mission cannot executed.

Risk acceptance
A formal and documented process indicating Army leadership understands the hazard, its associated cause, and the probable consequences to mission, personnel, equipment, public, and/or the environment and that they have determined that the total risk is acceptable because of mission execution. Risk acceptance is an Army leadership prerogative.

Risk acceptance level
Denotes the level of risk a particular level of Army leadership and management may accept. These levels are based on the magnitude of the risk involved and the duration of the risk acceptance.

Risk assessment
An evaluation of a risk in terms of loss should a hazard result in a mishap and against the benefits to be gained from accepting the risk.

Risk decision
The decision to accept or not accept the risk(s) associated with an action made by the commander, leader, or individual responsible for performing that action and having the appropriate resources to control or eliminate the risk's associated hazard.

Rocket
A motor which derives its thrust from ejection of hot gases generated from propellants carried within the motor casing.

Safety
Freedom from those conditions that can cause death, injury, occupational illness, or damage to, or loss of, equipment or property.

Safety assessment report
A formal, comprehensive safety report summarizing the safety data that has been collected and evaluated during the lifecycle before a test of an item. It expresses the considered judgment of the developing

agency on the hazard potential of the item and any actions or precautions that are recommended to minimize these hazards and to reduce the exposure of personnel and equipment to them.

Safety certification program
A program established and maintained by the battalion/squadron commander to ensure that personnel under their command designated as officer in charge and RSOs are competent and qualified to carry out the responsibilities and duties of the respective positions.

Safety controls
Mandatory procedural safeguards approved by the Secretary of the Army and determined to be necessary per safety studies and reviews. Safety controls ensure maximum safety of chemical agents throughout the life of the chemical weapon. Controls will be consistent with operational requirements.

Safety objectives
Criteria for comparing and judging measures for adequacy. Safety objectives incorporate the safest measures consistent with operational requirements.

Safety release
A formal document issued to any user or technical test organization before any hands-on training, use, or maintenance by troops. The safety release is a standalone document which indicates the system is safe for use and maintenance by typical user troops and describes the specific hazards of the system or item based on test results, inspections, and system safety analyses. Operational limits and precautions are included. The test agency uses the data to integrate safety into test controls and procedures and to determine if the test objectives can be met within these limits. A limited safety release is issued on one particular system (for example, Bradley Fighting Vehicle, serial number XXXXX). A conditional safety release is issued when further safety data are pending (for example, completion of further testing or a certain safety test) and restricts a certain aspect of the test.

Security/law enforcement
Activities associated with military police, U.S. Army Criminal Investigation Command, and other military or civilian personnel performing security or law enforcement rescue duties. Examples include traffic safety, investigating, apprehending suspects, guarding/patrolling, controlling disturbances, and intelligence activities.

Self/buddy aid
Administration of a chemical agent antidote to one’s self or to a coworker upon experiencing early symptoms of chemical agent poisoning.

Severity
A qualitative or quantitative assessment of the degree of injury, occupational illness, property damage, facility damage, or environmental damage associated with the maximum credible loss. Severity is dependent only on the maximum credible loss. Once established as a maximum credible loss, it does not change. Only the “probability” of a maximum credible loss can be reduced.

Significant risk
A risk associated with a particular hazard where the hazard likelihood of occurrence and its potential impact on the mission, person, equipment, or facility is such that it can be reasonability expected to cause bodily harm, damage to equipment or the facility, or delay in the execution of the mission unless corrected. Normally, they are assigned an RAC of 1, 2, or 3.

Single hearing protector (or protection)
Wearing either earplugs or noise muffs or noise attenuating helmets.

Single-hazard risk
Risk associated with a single hazard of the system. Single-hazard risks are characterized by consequence/probability pairs (these risks are typically classified by RAC matrix cells).

Soldiering
Noncombat activities peculiar to military life; includes receiving instruction/training in such activities, excludes classroom training. Examples include marching, police call, formation, barracks detail, and field sanitation.

Special hazards areas
Areas identified containing hazards which due to their nature could not be eliminated through design selection and therefore depend upon training, procedures, and PPE for control of the hazards to tolerable levels. Examples are paint booths, kitchens, machine shops, areas around conveyor belts, hazardous chemical storage areas, and so on.

Sports
Includes activities associated with sports, regardless of whether the participation is on or off duty, Army supervised or unsupervised, excludes hobbies. Examples include racquetball/paddleball, handball, softball, tennis, soccer, baseball, basketball, football, volleyball, skiing, swimming, scuba diving, golf, boating, hunting, fishing, martial arts, and canoeing.

Standards failure
Standards/procedures not clear or practical or do not exist.

Supervisory
Activities associated with the management of personnel. Examples are inspection tasks, directing workloads/work crews, monitoring work, crews, and planning unit activities.

Support failure
Inadequate equipment/facilities/services in type, design, availability, or condition or insufficient number/type of personnel, which influenced human error resulting in an Army mishap.

Surveillance
The observation, inspection, investigation, test, study, and classification of ammunition, ammunition components, and explosives in movement, storage, and use with respect to degree of serviceability and rate of deterioration.

System
A composite, at any level of complexity, of trained personnel, procedures, materials, tools, equipment, facilities, and software. The elements of this composite entity are used together in the intended operational or support environment to perform a given task or achieve a specific production, support, or mission requirement.

System inadequacy
A tangible or intangible element that did not operate to standards, resulting in human error or materiel failure. Also referred to as causes, readiness shortcomings, and/or root causes.

System safety
The application of engineering and management principles, criteria, and techniques to optimize safety within the constraints of operational effectiveness, time, and cost throughout all phases of systems', equipment's, or facilities' lifecycle.

System safety engineering
An engineering discipline requiring specialized professional knowledge and skills in applying scientific and engineering principles, criteria, and techniques to identify and eliminate hazards or reduce the risk associated with the hazards.

System safety lessons learned
A collection of real or potential safety or health-related problems based on data analysis or experience that can be applied to future and current systems to prevent similar recurrences.

System safety management
An element of management that defines the system safety program requirements and ensures the planning, implementation, and accomplishment of system safety tasks and activities consistent with the overall program requirements.

System safety management plan
A management plan that defines the system safety program requirements of the U.S. Government. It ensures the planning, implementation, and accomplishment of system safety tasks and activities consistent with the overall program requirements.

System safety program plan
A description of planned methods to be used by the contractor to implement the tailored requirements of MIL–STD–882E, including organizational responsibilities, resources, method of accomplishment, milestones, depth of effort, and integration with other program engineering and management activities and related systems.

System safety risk assessment
System safety risk assessments are system safety analysis that is applicable outside of acquisitions. A document that provides a comprehensive evaluation of the safety risk being assumed for the system under consideration at the milestone decision review.

System safety working group
A group chartered by the PM, product manager, or project manager to provide program management with system safety expertise and to ensure communication among all participants. A formally chartered group of persons, representing organizations associated with the system acquisition program, organized to assist the managing activity system PM in achieving the system safety objectives. Regulations of the military components define requirements, responsibilities, and memberships.

Tactical facilities
Prepared locations with an assigned combat mission, such as missile launch facilities, alert aircraft parking areas, or fixed gun positions.

Technical tests
A generic term for testing which gathers technical data during the conduct of development testing, technical feasibility testing, qualification testing, Joint development testing, and contractor or foreign testing.

Test agency
An organization that conducts development tests or user tests.

Test/study/experiments
Activities associated with the conduct of tests, studies, and experiments on natural or manmade materiel or on human beings or animals for research projects. Examples are preparing for test/study/experiment and performing test/study/experiment.

Tolerable risk
The level of risk associated with a specific hazard below which a hazard does not warrant any expenditure of resources to mitigate. From a legal standpoint it would be considered as a “de minimis” risk, from the Latin phrase “de minimis noncurat lex” meaning “the law does not concern itself with trifles.”

Toxic chemicals
As used by EPA, chemicals whose total emissions or releases should be reported annually by owners and operators of certain facilities that manufacture, process, or otherwise use a listed toxic chemical. The list of toxic chemicals is identified in Title III of Superfund Amendments and Reauthorization Act.

Training-related death
A death associated with a noncombat military exercise or training activity that is designed to develop a military member’s physical ability or to maintain or increase individual/collective combat and/or peacekeeping skills, and is due to either a mishap or the result of natural causes occurring during or within 1 hour after any training activity where the exercise or activity could be a contributing factor. This does not apply to DA Civilians participating in a wellness program.

U.S. Army Reserve personnel
USAR personnel members who are on:
a. Active duty for training.
b. Inactive duty training.
c. Annual training.
d. Active duty special work.
e. Temporary tour active duty.
f. Active Guard/Reserve.
g. Full-time manning.

Unexploded ordnance
AE that have been primed, fused, armed, or otherwise prepared for action and that have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or materiel and remain unexploded by malfunction, by design, or for any other cause. UXO is synonymous with dud.

User test
A generic term which encompasses testing which requires the use of user representative user troops and units for early user test and experimentation, force development test and experimentation, innovative tests, concept evaluation program tests, training effectiveness analysis tests, initial operational test and evaluation, follow-on operational test and evaluation, and Joint user tests.

Volunteers
Individuals who serve as unpaid assistants to facilitate the commander's ability to provide comprehensive, coordinated, and responsive services that support the readiness of Soldiers, DA Civilians, and their Families by maximizing technology and resources, adapting resources to unique installation requirements, eliminating duplication in service delivery, and increasing service effectiveness. An installation can have many types of volunteers, with each having specific guidelines that govern its management: statutory volunteers, individuals providing gratuitous service, volunteers for private organizations, and student interns.

Workplace
A place (whether or not within or forming part of a building, structure, or vehicle) where any person is to work, is working, for the time being works, or customarily works for gain or reward and in relation to an employee includes a place, or part of a place, under the control of the employer (not being domestic accommodation provided for the employee).

Work-related injuries
Injuries or occupational illnesses incurred while performing duties in an on-duty status.

Worst single-hazard risk
Consequence/probability pair representing the highest system risk.

SUMMARY of CHANGE

DA PAM 385–10
Army Safety and Occupational Health Program Procedures

This major revision, dated 24 July 2023—

- Changes the title from “Army Safety Program” to “Army Safety and Occupational Health Program Procedures” (cover).

- Updates appendix A and glossary.

- Reduces redundancy, consolidates procedures/guidelines, and moves mandatory requirements to AR 385–10 (throughout).

- Incorporates Army Directive 2018–07–15, Prioritizing Efforts–Readiness and Lethality (Update 15) (throughout).